A MONOGRAPH ON THE POLYCHAETA OF SOUTHERN AFRICA

PART 1. ERRANTIA

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A MONOGRAPH ON THE POLYCHAETA OF SOUTHERN AFRICA

PART 1. ERRANTIA

BY

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Polychaeta of Southern Africa. Pt. 1

Corrigenda

p. 332. Corrigendum, legend to Fig. 14.12, *substitute:*

FIG. 14. 12. *Pseudonereis variegata.* (A) Head. (B, C) Dorsal and ventral views of proboscis. (D) Anterior foot. (E) Falciger. (F) Posterior foot. *Pseudonereis anomala* (after Gravier, 1901). (G) Head and proboscis. (H) Anterior foot. (I) Posterior foot. (J) Falciger. *Perinereis vancaurica.* (K, L) Dorsal and ventral views of proboscis. (M) Anterior foot. (N) Posterior foot. (O) Falciger. *Perinereis nuntia vallata.* (P, Q) Dorsal and ventral views of proboscis. (R) Posterior foot. (S) Falciger.

p. 336. Corrigendum, legend to Fig. 14.13, *substitute:*

FIG. 14. 13. *Perinereis falsovariegata.* (A) Head. (B, C) Dorsal and ventral views of proboscis. (D) Falciger. (E) Anterior foot. (F) Posterior foot. *Perinereis capensis.* (G) Anterior foot. (H) Posterior foot. (I) Head. (J, K) Dorsal and ventral views of proboscis. (L) Foot of heteronereid form. (M) Falciger. *Perinereis cultrifera.* (O, P) Dorsal and ventral views of proboscis. (Q) Posterior foot. *Perinereis nigropunctata.* (R) Head. (S) Anterior foot. (T) Posterior foot. (U, V) Dorsal and ventral views of proboscis.

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PREFACE

The polychaete fauna of southern Africa is very rich and varied. Over 800 species have already been recorded and there is no doubt that many more await discovery. Unfortunately the records and descriptions of the known species are scattered through more than 50 papers. There is thus an urgent need for a monograph not only as an aid for further taxonomic work but also for the rapid identification of common species for ecological and physiological studies.

This monograph covers "southern Africa", here defined as the subcontinent south of the twentieth parallel and extending from the northern parts of South West Africa around the Cape of Good Hope to the port of Beira in Mocambique. For good measure the faunae of Angola and Madagascar are included too but as these regions are poorly explored it is unlikely that the treatment given here is adequate. The coverage of planktonic species is good for most of the species known from the world oceans have been found in samples as widely distributed as Angola, the southern tip of the Agulhas Bank and Nosy Bé in northern Madagascar. The depth range of benthonic species includes shore forms from coasts and estuaries to dredged forms from the edge of the continental shelf. In general this is about 200 metres but there are also a few scattered records from greater depths, some exceeding 3000 metres. Undoubtedly many more species remain to be described from these deeper levels of the continental slope.

The main purpose of this monograph is to provide an adequate description of all the species of polychaetes known from this area with keys for rapid identification. Since the fauna is incompletely known the keys cover many other genera and species, marked with an asterisk, which may later be found in the area. By the same token it is hoped that they will be useful to workers beyond the limits of southern Africa. Another purpose is to provide a check-list of the whole fauna with a summarised distribution of each species and references to the works in which the records will be found. The method of presenting this is novel and will be described on p. 2.

The collections on which this work is based were made mainly by the University of Cape Town, and I have to thank my colleagues and many past students for assistance in the field. I also wish to thank many other institutions for sending me material. Among these are the several South African universities and museums, the Division of Sea Fisheries, the National Institute of Oceanography in the United Kingdom, the British Museum (Natural History), the American Museum of Natural History, the Berlin Museum, the Danish Museum in Copenhagen and the State Museum in Stockholm. Not only was I able to examine much South African material in this way, but I was also able in many cases to compare this material

with the types. The types of my own new species have been deposited in two museums. Those of species described in "The polychaete fauna of South Africa: Part 5" (Day, 1960), have been placed in the South African Museum, Cape Town; while the types of all of the other new species described by me from southern Africa have been deposited in the British Museum (Natural History), London.

This study has been carried on at intervals for more than 30 years and it would have been impossible without generous financial aid from several sources. I would like to acknowledge my gratitude to the University of Cape Town, the South African Council for Scientific and Industrial Research, the Carnegie Corporation of New York, the Nuffield Foundation and the Oppenheimer Memorial Trust.

Finally I would like to thank my many friends who have helped in the preparation of the monograph. First Miss Margaret Denholm for the laborious work of typing (and often retyping) the text. Next Miss V. J. Vanderplank, Miss Jenny Jarvis, Mr. George Branch and Miss Elizabeth Münchmeyer who helped with the illustrations and finally Mr. Reginald Sims and my many friends at the British Museum (Natural History) who have advised and assisted in the actual publication.

INTRODUCTION

A BRIEF SURVEY OF POLYCHAETE LITERATURE

The early classical accounts of what is now known as the Class Polychaeta of the Phylum Annelida dealt largely with the taxonomy of European species. General accounts such as those of Cuvier (1817), Savigny (1820), Audouin and Milne-Edwards (1832–33), Grube (1851), Quatrefages (1865), Malmgren (1867) and Ehlers (1864–68) brought order out of the chaotic group "Vermes". These are only a few of the more important works and many more will be found in the list of references at the end of this monograph, while detailed accounts of particular groups will be referred to under the introductions of the various families. The first comprehensive account of the European fauna with clear descriptions, good figures and useful keys to the various families, genera and species was provided by Fauvel (1923 and 1927) in the Faune de France series of monographs. Fauvel's monographs are invaluable to systematists everywhere.

It is now known that polychaetes are the dominant organisms living in soft bottoms at all depths of the sea. While many hundreds of species await description, attention is now turning to ecological and physiological studies. For references to all branches of polychaete research up to 1950 the reader is referred to Dr. Olga Hartman's "Literature of the polychaetous Annelids" published in 1951. Her "Catalogue of the polychaetous Annelids of the world" published in 1959 with a supplement and index in 1965 is also a useful tool in systematic work. For details of anatomy and physiology the most recent general works are those of Dales (1963) on the Annelida and Fauvel (1959) in Grassé's "Traite de Zoologie" vol. V (1). Bullock and Horridge (1965) give a detailed account of the structure and function of the nervous system.

Fauvel (1923 and 1927) covers most of the cosmopolitan and European species in southern Africa but does not deal with the tropical species which dominate the fauna of Madagascar, Mocambique and Natal. For these Indo-west-Pacific species the most useful works are Gravier's beautiful monographs on the Red Sea fauna (Gravier 1899–1908), Fauvel (1919) on the fauna of Madagascar and Fauvel (1930, 1932 and 1953) on Indian species. There are, of course, many other papers dealing with the Indo-west-Pacific fauna but there is no space to mention them all. The few subantarctic species which reach the colder waters of the Cape are covered by the works of Ehlers (1901), Monro (1930 and 1936) and the keys given by Hartman (1964).

This leaves the endemic species which comprise about 36 per cent of the fauna of

southern Africa. Unfortunately there is no comprehensive work which covers these and the descriptions are scattered through some 57 papers, which are listed chronologically on p. 3. A brief historical survey is given below.

The earliest records of polychaetes from southern Africa were made by individual explorers and collectors such as W. C. Peters (1854) who collected along the coast of Mocambique and J. A. Wahlberg who collected in Natal and the Cape of Good Hope. The latter collection was later described by Kinberg (1858–1910). The most important of these early collections, however, was that made by Ludwig Schmarda and published in 1861.

From 1850 onwards many scientific research vessels called in at Table Bay *en route* to Antarctica or the Indian Ocean. Stimpson (1856) described a small collection made at the Cape by the U.S. vessel "Blake", McIntosh (1885) described a few South African species as part of the "Challenger" collections and Ehlers (1908 and 1913) described the collections made by the "Valdivia" and the Deutches Südpolar Expedition. The more recent expeditions which collected around southern Africa are the "William Scoresby" and "Discovery" reported by Monro (1930 and 1936), the "Meteor" reported by Augener (1931) and the "Galathea" reported by Kirkegaard (1959).

The first collections made by local scientists at the Cape were those of Dr. Percival of the South African Museum and Professor Gilchrist of the University of Cape Town. Percival's collection was described by Willey (1904) and Gilchrist's by McIntosh (1904 and 1925). Meanwhile collections were also made in South West Africa by Captain Hupfer and Professor Michaelsen. These were sent to the Zoological Museum in Hamburg and described by Augener (1918) in an important monograph covering the whole west African polychaete fauna. Another important collection was made about the same time in Madagascar and described by Fauvel (1919).

Professor T. A. Stephenson's classic survey of the intertidal fauna and flora of South Africa started in 1932 and the early polychaete collections were described by Monro (1933 and 1937). My own work also started at this time (Day 1934) and in 1938 I joined Professor Stephenson and made intertidal collections all around the South African coast. World War II interrupted the work and the intertidal collections were described much later along with the estuarine species in 1951, 1953, 1955 and 1957. The ecological surveys were then extended below tide marks and the polychaetes were reported in Day 1960, 1961, 1963 and 1963a. The more recent collections still have to be sorted and work on the shelf fauna will continue.

Little has been published on planktonic polychaetes from southern Africa. A few scattered records from the area will be found in the works of Ehlers (1913 and 1917), Monro (1930 and 1936) and Tebble (1960). By and large, however, all these works deal with the South Atlantic and Antarctic seas. My own work on planktonic polychaetes from southern Africa is still unpublished though descriptions and a summary of the records have been included in this monograph.

NOTES ON USING THE MONOGRAPH

When identifying material from a particular area it is first necessary to know

what papers contain original records or descriptions of the fauna. These are not easy to recognise in a long list of references such as that at the end of this monograph. For this reason a complete chronological list is given below.

1. Peters, W. C., 1854
2. Stimpson, W., 1856
3. Kinberg, J. G., 1858–1910
4. Schmarda, L. K., 1861
5. Baird, W., 1865b
6. Quatrefages, A. de, 1865
7. Kinberg, J. G., 1867
8. Grube, E., 1867
9. Grube, E., 1869
10. McIntosh, W. C., 1885
11. Marenzeller, E. von, 1887
12. Willey, A., 1904
13. McIntosh, W. C., 1904
14. Gravier, C., 1905c
15. Ehlers, E., 1908a
16. Ehlers, E., 1908
17. Gravier, C., 1909
18. Ashworth, J., 1910
19. Ashworth, J., 1911
20. Pixell, H., 1913
21. Ehlers, E., 1913
22. Ramsay, L., 1914
23. Horst, R., 1917
24. Ehlers, E., 1917
25. Horst, R., 1918
26. Augener, H., 1918
27. Fauvel, P., 1919
28. Fauvel, P., 1921
29. Treadwell, A. L., 1921
30. Seidler, H. J., 1923
31. Fauvel, P., 1923a
32. McIntosh, W. C., 1925
33. Monro, C. C. A., 1930
34. Augener, H., 1931
35. Monro, C. C. A., 1933
36. Day, J. H., 1934
37. Monro, C. C. A., 1936
38. Monro, C. C. A., 1937
39. Treadwell, A. L., 1943
40. Day, J. H., 1951
41. Day, J. H., 1953
42. Tebble, N., 1953
43. Tebble, N., 1953a
44. Day, J. H., 1955
45. Day, J. H., 1957
46. Banse, K., 1957
47. Wilson, D. P., 1958
48. Kirkegaard, J. B., 1959
49. Tebble, N., 1960
50. Day, J. H., 1960
51. Day, J. H., 1961
52. Uschakov, P. V., 1962
53. Day, J. H., 1962
54. Laubier, L., 1962
55. Day, J. H., 1963
56. Day, J. H., 1963a
57. Bellan, G. and Picard, J., 1965
— Day, J. H., unpublished records

In biogeographical studies one must know what species are found in the area covered by the monograph, where and at what depth they occur and what synonyms have been used in earlier works. It is hoped that the species lists appended to each family will supply this information rapidly and that the "Records" and "Distribution" will supply the further details that may be required.

All the published records of polychaetes from southern Africa, Angola and Madagascar have been extracted from the list of papers given above and other, more recent unpublished records have been added. The complete list of valid species is given family by family. Each list is arranged alphabetically for ease of reference with synonyms and incorrect identifications preceded by the word "as". All species names are annotated by a code showing which workers used that name and the province and depth in which the records were made. The code is explained as follows:

Authority for the record	*Province where collected*	*Depth range*
Shown by a number which refers to the numbered list of references given above.	A = Angola	a = abyssal (over 1000 metres)
	C = Cape Province	d = deep (100–999 metres)
	M = Madagascar	e = estuarine
	N = Natal	i = intertidal
	P = Portuguese East Africa (Mocambique)	p = planktonic
		s = shallow (1–99 metres)
	W = South West Africa	vd = very deep (500–999 metres)

The use of the code is best shown by an example. *Lepidonotus semitectus* is listed among the Polynoinae on p. 37 as follows:

Lepidonotus semitectus Stimpson 2Ci (and other code numbers)
as *Lepidonotus wahlbergi* Kinberg 3CiNi (and other code numbers)
as *Polynoe trochiscophora* Schmarda 4Ci

The first record shows that the valid name is *Lepidonotus semitectus* first used by Stimpson 1856 (code number 2 in the literature list) and his record was made in the Cape Province (code letter C) in the intertidal zone (code i). The same specific name has been used by several other workers as shown by the other code numbers against it. The first synonym is *Lepidonotus wahlbergi* Kinberg and the code 3CiNi gives the reference to Kinberg's publication in 1858 1910 and the information that these specimens were collected in the intertidal zone in the Cape Province and Natal. The second synonym is *Polynoe trochiscophora* Schmarda and the code letters 4Ci show that Schmarda's name was published in 1861 and the specimens came from the intertidal zone of the Cape Province. Other synonyms and records follow and all of them together show the full range of synonyms which appear in the polychaete literature of southern Africa and that *Lepidonotus semitectus* is a common intertidal and shallow water species which extends from South West Africa around the Cape of Good Hope to Natal.

More detailed information is appended to the description of each species. If there are only three or four locality records, all of them are given, and if there are many, a summary shows the limits of the geographical and bathymetric range. After careful consideration, it was decided that place names would not be as helpful as latitude and longitude since the names of many collecting stations would not be found on ordinary maps and, in any case, dredged and plankton records would have to be given in degrees of latitude and longitude. Minutes of latitude and longitude have also been omitted for the sake of brevity and this means that unless the reader refers to the publication from which the record has been extracted, he will not be able to pinpoint the record more accurately than somewhere in the 60 mile square formed by a degree of latitude and longitude. For most purposes this is sufficient. Luckily the whole of southern Africa is covered by degrees of south latitude and east longitude so that the words "south" and "east" are omitted. Thus the locality can be expressed in four figures and the depth range by a letter. For example the records for *Hermonia hystrix* described on p. 32 are shown as Cape (31/15/d) ; ? Natal (29 31 s). This means that the species has been recorded in Cape waters in the latitude/longitude square 31 S/15 E, in the depth range 100–499 metres ; there is

also a doubtful record from Natal in the latitude/longitude square 29°S/31°E in the depth range 1–99 metres. Reference to the map facing p. 9 will show that the Cape record is off Lamberts Bay and the doubtful Natal record is close to Durban.

Distribution beyond the limits of southern Africa is given in the conventional form and a code letter signifying the depth range has been added when this information is available. It is urged that some indication of depth range should always be added to summaries of distribution since the fauna at different depths may differ markedly. For example tropical species are restricted to intertidal and shallow depths while the very deep and abyssal bottoms may be colonised by cold water species. It may also be noted that the summary of distribution given in this monograph has been deliberately selected from twentieth century reports of well known taxonomists since earlier works are not always reliable.

THE DISTRIBUTION OF POLYCHAETES WITH PARTICULAR REFERENCE TO SOUTHERN AFRICA

Polychaetes are an ancient group of worms. They are characteristically marine and the great majority are benthonic though some 50 planktonic species are distributed throughout the oceans of the world. Benthonic polychaetes are probably the commonest type of macroscopic animal on sandy or muddy bottoms and they extend from the sea shore to the greatest depths of the hadal zone that have yet been sampled. They are also common in estuaries and a few species extend into fresh water although none of these have been recorded from southern Africa.

In marine environments many species are very widely distributed. This is not surprising among planktonic forms for they are typically oceanic rather than neritic and the oceanic forms of all groups of animals are widespread. Among benthonic animals, however, a world-wide distribution is very unusual. None the less many benthonic polychaetes are known from all the oceans of the world and from the Arctic to the Antarctic. Species such as *Chaetopterus varieopedatus*, *Owenia fusiformis* and *Hydroides norvegica* seem to have been recorded from all seas that have been thoroughly investigated. Many other examples might be quoted and this has led some investigators to claim that the bulk of the Polychaeta are not restricted to the zoogeographical regions. This, however, is an overstatement. In the case of *Diopatra neapolitana* which was reported to have a cosmopolitan distribution, it was found that several closely related species had been misidentified and when other "cosmopolitan" species are studied more carefully it will probably be found that many of them have been misidentified in the past. Current work on *Nephtys hombergi* suggests that this is another "cosmopolitan" species which has gained its reputation through misidentification.

Another widely distributed group is the circumtropical group of species. *Eurythoe complanata* is a good example for it is found in the shallow waters of all tropical seas. Other tropical species are more limited. For example *Iphione muricata* is an Indo-west-Pacific species which extends from the Red Sea down the coast of Africa to Natal and across the Indian Ocean to Indonesia and thence through the western Pacific to southern Japan and the Great Barrier Reef and New Caledonia. In

tropical America it is replaced by the related form *Iphione ovata* which occurs on both the Pacific and Atlantic coasts.

In the Atlantic ocean there is a large group of species which appears to be restricted to temperate waters for many Atlantic species have been recorded from the coasts of Europe and West Africa as far south as Cape Verde. They are not known from tropical western Africa but reappear in the cool waters of South West Africa and extend down to Cape Agulhas. Possibly they will later be discovered in deeper and thus cooler waters in tropical latitudes. This at any rate is the general theory regarding bipolar distribution.

The account given thus far has stressed the widespread distribution of four groups of species. But there are many other more restricted groups. The work of Dr. Olga Hartman and other American taxonomists has shown that the bulk of the new world fauna is distinct from that of the old world. Similarly Annenkova and Uschakov have shown that there are characteristic species in the Arctic while Monro and others have described many species which are restricted to the Antarctic. As will be shown later, about 36 per cent of the South African fauna is endemic. Obviously a great deal more remains to be done in many parts of the world and many of the early records need revision but there is already sufficient evidence that the distribution of polychaetes is essentially similar to that of other shallow water marine animals described by Ekman (1953).

Within the limits of southern Africa (defined earlier as Africa south of the twentieth parallel of latitude) the patterns of distribution of the intertidal marine fauna and flora are related to the ocean currents. This has been shown conclusively by Stephenson in a long series of papers summarised in Stephenson (1941, 1944 and 1947). Stephenson's intertidal survey is now being extended downwards to the edge of the continental shelf. In these deeper waters the currents change and sea temperatures are uniform over much wider areas of sea bottom than they are in the intertidal zone. The work is incomplete for an adequate coverage of 2,500 miles of coast and continental shelf takes a long time. In particular, little is yet known of the shelf fauna of Natal and Mocambique. None the less a preliminary analysis of the polychaete fauna of southern Africa from the intertidal zone to about 200 metres provides a useful introduction to further study and is given below. Earlier discussions of polychaete distribution in different parts of southern Africa will be found in Augener (1918), Fauvel (1919), Day (1957) and Kirkegaard (1959).

As mentioned earlier, about 750 species of polychaetes are known from this region and altogether there must be over 5000 records. A random sample of this fauna was obtained by extracting those benthonic species whose generic names started with the letters A to F. This gave 171 species. A preliminary inspection showed that 46 had been recorded from only one locality in southern Africa and a further 25 were known from only two. All of these were rejected as being too rare for distribution analysis and the remaining 100 species which were known from three or more localities were analysed further.

An analysis of the recorded depths showed that there are very few records of more than 200 metres so that practically nothing is known of the archibenthal or abyssal fauna and all the notes on distribution that follow apply to the intertidal and shelf

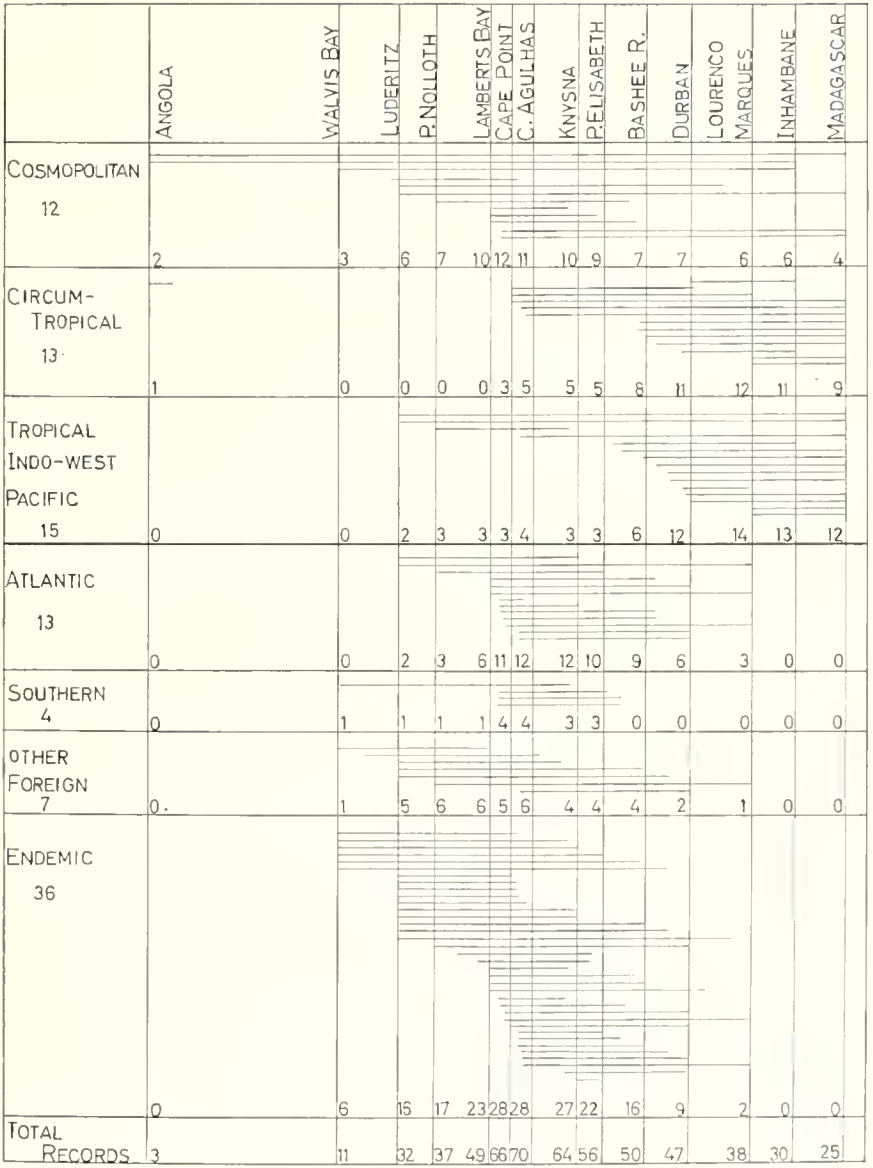
ANGOLA
WALVIS BAY
LUDERITZ
P. NOLLOTH
LAMBERTS BAY
CAPE POINT
C. AGULHAS
KNYSNA
P. ELISABETH
BASHEE R.
DURBAN
LOURENCO MARQUES
INHAMBANE
MADAGASCAR
COSMOPOLITAN 12
2 3 6 7 10 12 11 10 9 7 7 6 6 4
CIRCUM-TROPICAL 13
1 0 0 0 0 3 5 5 5 8 11 12 11 9
TROPICAL INDO-WEST PACIFIC 15
0 0 2 3 3 3 4 3 3 6 12 14 13 12
ATLANTIC 13
0 0 2 3 6 11 12 12 10 9 6 3 0 0
SOUTHERN 4
0 1 1 1 1 4 4 3 3 0 0 0 0 0
OTHER FOREIGN 7
0 1 5 6 6 5 6 4 4 4 2 1 0 0
ENDEMIC 36
0 6 16 17 23 28 28 27 22 16 9 2 0 0
TOTAL RECORDS
3 11 32 37 49 66 70 64 56 50 47 38 30 25

FIG. 0.1. Distribution of faunistic components in a random sample of 100 polychaetes from southern Africa.

fauna. Of the 100 species, 63 had been recorded from both the shore and the shallows while 37 had never been recorded from the intertidal zone. This suggests that there are twice as many species which are intertidal in some part of their range than those that are confined to deeper levels of the shelf. In passing it may be noted that there are very few species that are confined to the intertidal zone and never extend below low tide marks. One characteristic intertidal species that springs to mind is the serpulid *Pomatoleios kraussi*.

The geographical distribution of the 100 species sample from Angola around the Cape to Mocambique and Madagascar is shown graphically in fig. 0.1.

The main collecting stations are separated by intervals corresponding to the geographical distances between them and the range of each species is shown as a line joining the limits of the recorded distribution. This implies that the distribution is continuous between these points and for most species the locality records are scattered at fairly regular intervals throughout this range. Only in one case (*Eurythoe complanata*) is the distribution believed to be discontinuous. This species is circumtropical in distribution and in southern Africa it has been recorded from the tropical waters of Angola but is absent from the cold waters of South West Africa and the temperate waters of the southern Cape. It reappears again in the subtropical waters of Natal. It is significant that only one species out of the sample 100 has this type of discontinuous distribution.

The sample 100 species has been divided into six faunistic components on the basis of their distribution beyond the limits of southern Africa and each component is described in turn.

Table 1
Analysis of polychaete distribution around southern Africa

	Angola	Walvis Bay	Luderitz	Port Nolloth	Lamberts Bay	Cape Point	Cape Agulhas	Knysna	Port Elizabeth	Bashee River	Durban	Lourenco Marques	Inhambane	Madagascar
Number of records	3	11	32	37	49	66	70	64	56	50	47	38	30	25
% Cosmopolitan	67	27	19	19	20	18	16	16	16	14	15	16	20	16
% Circumtropical	33					5	7	8	9	16	23	32	37	36
% Indo-Pacific			6	8	6	5	6	5	5	12	26	37	43	48
% Atlantic			6	8	12	17	17	19	18	18	13	8		
% Southern		9	3	3	2	6	6	5	5					
% Other foreign		9	16	16	12	8	9	6	7	8	4	3		
% Endemic		55	50	47	47	42	40	42	49	32	19	5		

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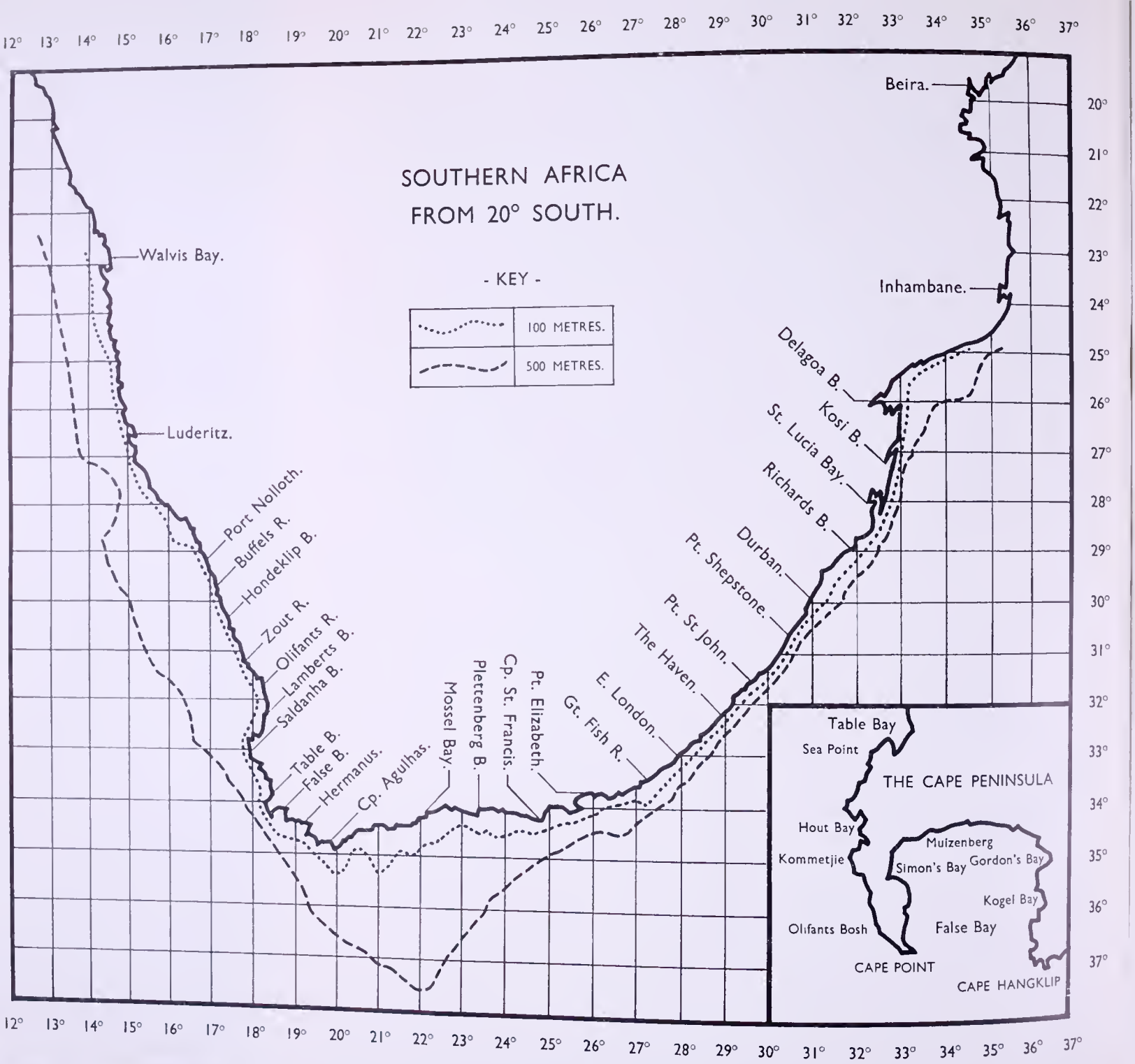
SOUTHERN AFRICA
FROM 20° SOUTH.
- KEY -
100 METRES.
500 METRES.
Walvis Bay.
Luderitz.
Port Nolloth.
Buffels R.
Hondeklip B.
Zout R.
Olifants R.
Lamberts B.
Saldanha B.
Table B.
False B.
Hermanus.
Cp. Agulhas.
Mossel Bay.
Plettenberg B.
Cp. St. Francis.
Pt. Elizabeth.
Gt. Fish R.
E. London.
The Haven.
Pt. St John.
Pt. Shepstone.
Durban.
Richards B.
St. Lucia Bay.
Kosi B.
Delagoa B.
Inhambane.
Beira.
Table Bay
Sea Point
THE CAPE PENINSULA
Hout Bay
Kommetjie
Muizenberg
Simon's Bay
Gordon's Bay
Kogel Bay
Olifants Bosh
False Bay
CAPE POINT
CAPE HANGKLIP
12° 13° 14° 15° 16° 17° 18° 19° 20° 21° 22° 23° 24° 25° 26° 27° 28° 29° 30° 31° 32° 33° 34° 35° 36° 37°
20° 21° 22° 23° 24° 25° 26° 27° 28° 29° 30° 31° 32° 33° 34° 35° 36° 37°

1. *The Cosmopolitan Component* includes those species which have been recorded from the tropics and the northern and southern cold temperate zones of all oceans. Some species are known from polar seas as well. In the 100 species sample 12 are cosmopolitan and it will be seen that they are distributed all around southern Africa. The actual number recorded at any one collecting station is mainly a reflection of the intensity of collecting in that area. For this reason the percentage composition of the total records from each locality is shown in Table 1.

From this it will be evident that apart from Angola and Walvis Bay where the total number of records is too small to provide reliable percentages, the cosmopolitan component forms a very constant proportion of the fauna at all collecting stations. In brief the cosmopolitan component comprises about 12 per cent of the total fauna of southern Africa and is uniformly distributed around its coasts.

2. *The Circumtropical Component* includes those species which are common in the tropics but may extend into warm temperate waters of the Indian, Atlantic and Pacific oceans. Thirteen such species occur in the 100 species sample. As noted earlier only one has a discontinuous distribution and occurs in Angola, is absent from the Cape and reappears in Natal. The other 12 species have been recorded from the tropical Atlantic but not from Angola possibly because little work has been done there. Neither have they been recorded from South West Africa which is bathed by cold water. They are, however, strongly represented in Mocambique and Madagascar where they form more than 30 per cent of the fauna. From here they extend southwards in decreasing numbers. There is a marked fall at the Bashee River in the Transkei but a few reach the east side of Cape Point (False Bay). In brief the circumtropical component forms 13 per cent of the total fauna of southern Africa ; it is largely restricted to the tropical and subtropical shores of Mocambique and Natal.

3. *The Tropical Indo-west-Pacific Component* includes those species which are common in the tropical Indian Ocean or western Pacific but may extend into warm temperate waters. The western limit is the Mediterranean and the eastern limit is Hawaii. Fifteen species belonging to this group occur in the sample 100. They form more than 40 per cent of the fauna of Madagascar and extend southwards in decreasing numbers. There is a marked fall at the Bashee River but thereafter two to three species which form about 6 per cent of the local fauna extend all around the southern tip of Africa to Luderitz in South West Africa. It is noteworthy that there is no reduction at Cape Point and that this tropical component extends into the cold Benguela Current. It is possible that South Africa endemics have been derived from cold tolerant forms of this group of Indo-west-Pacific species.

4. *The Atlantic Component* includes those species which are common in the temperate waters of the North Atlantic. Some of them extend into the Mediterranean and a few extend along the coasts of tropical western Africa. Most of them, however, appear to be absent from the tropics and reappear in the temperate waters of the South Atlantic. They have not been recorded from other oceans.

In the sample 100, there are 13 of these Atlantic species showing that this component forms as strong an element in the total fauna of southern Africa as the

cosmopolitan, the circumtropical or the Indo-west-Pacific component. Their distribution within this area is surprising. It had been expected that they would have been restricted to the Atlantic coasts between Walvis Bay and Cape Point, but in fact they seem to be most common along the south coast between Cape Point and the Bashee River and some even reach Lourenco Marques. The Atlantic component is common in dredgings and it is possible that the strength of this component along the south coast is a reflection of the large number of dredgings on this part of the coast.

5. *The Southern Component* includes those species which are widely distributed in temperate or cold waters of the southern hemisphere but do not extend to the tropics. Their range includes such areas as the Straits of Magellan, the Falkland Islands, Tristan da Cunha, Kerguelen, southern Australia and New Zealand. They do not reach Antarctica and it may be noted in passing that no typically antarctic species occur in southern Africa.

The southern component is represented by four species in the sample 100. It is thus a small but definite element in the total fauna. Most of the records come from dredgings and they are fairly evenly spread between Walvis Bay and Port Elizabeth. Since the bottom temperature on the continental shelf within these limits is 12 to 14 C. the distribution of the southern component is understandable.

6. *"Other Foreign" species.* Under this heading are lumped all those species whose distribution extends beyond the limits of southern Africa but which cannot be assigned to any of the components defined above. It is probable that they really belong to one of the other components but their distribution is imperfectly known and some of the anomalous records may be due to misidentifications. Records in southern Africa do not reveal any obvious pattern but the species tend to form a more important group on the Atlantic coast than elsewhere.

7. *The Endemic Component* includes those species which have not been recorded beyond the limits of southern Africa as defined earlier. There are 36 such species in the sample 100 showing that the endemic component is about 36 per cent of the total fauna. The percentage of endemics at the different stations along the coast is particularly interesting. Table 1 shows that the percentage remains practically constant along the whole coast from Luderitz to Port Elizabeth. At Walvis Bay there is a slight increase to 55 per cent but as this represents 6 species out of 11 this change may not be significant in which case endemics would form about 35 per cent of the fauna at any point from South West Africa south and east to Port Elizabeth. Further along the coast the percentage of endemics drops abruptly to 32 per cent at Bashee River, 19 per cent at Durban and 5 per cent at Lourenco Marques. This sample shows no endemics further to the north but more complete records indicate that 1–2 per cent reach Inhambane.

It has often been implied that there are two groups of endemics in southern Africa or even three. This has arisen from the work of Stephenson on the intertidal biota who showed that there is a subtropical biota in Natal, a warm temperate biota on the southern coasts of the Cape and a cold temperate biota on the west or Atlantic coast stretching as far north as Cape Frio in South West Africa. These

three divisions of the total biota which includes of course not only the endemic component but all the other components as well, will be considered shortly but as far as the endemic polychaetes are concerned there is no evidence of two distinctive groups let alone three. Reference to fig. 0.1 shows that the range of individual endemic species is very variable. Some are restricted to the west coast, some extend from various points on the west coast to the south coast or Natal, some are restricted to the south coast and others extend from there onto the coast of Natal or even reach Lourenco Marques. None are restricted to the Natal coast. When all the endemic species are considered together they do not form two distinct groups, one centred on the west coast, and the other centred on the south coast, but rather a single group. It is concluded that there is one endemic polychaete fauna in southern Africa.

Faunistic Provinces in Southern Africa

When the various components of the polychaete fauna are considered together certain conclusions may be drawn. It would appear that the fauna of Madagascar and Mocambique is very similar and is composed mainly of circumtropical and Indo-west-Pacific species along with a few ever-present cosmopolitan forms. The strength of the tropical components in this area is not surprising considering the sea temperature is usually above 25°C. South of Lourenco Marques which is incidentally the southern limit of coral reefs though not of individual coral growths, there is a weakening of the tropical components and an increase of endemics and other components. This change continues along the Natal coast and becomes very marked at Bashee River which seems to be a critical point in geographical distribution. It is at this point that the warm Agulhas Current swings away from the coast and a wedge of cooler water lies over the shelf and occasionally comes to the surface inshore when the Agulhas Current swings further out to sea. From Bashee River south and west to Cape Point the tropical components are weak and other components are more important. The endemic component in particular forms almost half the fauna at any point. From Cape Point northwards along the Atlantic coasts the fauna is very similar to the south coasts ; it is true that the remnants of the circumtropical component do not pass Cape Point but the Indo-west-Pacific component does not decrease any further and the endemic component remains equally strong. In brief there certainly are changes in the polychaete fauna in the vicinity of Cape Point but they are not marked. Cape Point is not as marked a barrier as is Bashee River. This finding is very different from that of Stephenson but it should be remembered that he was working on the intertidal biota alone and here the polychaete fauna both of the intertidal zone and the whole continental shelf down to a depth of 200 metres is being considered. When hydrographic conditions are examined the significance of the wider depth range is apparent. The intertidal zone of the south coast from Bashee River to Cape Point is bathed by surface waters which have a temperature range of about 15° to 20°C. whereas from Cape Point north along the west coast to South West Africa the intertidal temperatures are about 12° to 15°C. As a result there are distinct intertidal biotas on the two coasts.

At a depth of 100 metres the bottom temperature is surprisingly uniform at 12° to 14° C. from Port Elizabeth on around Cape Point and northwards along the west coast to Luderitz. In this case it is not surprising that there is one shelf fauna and that those species which can tolerate a bathymetric range of 0–100 metres can extend all around southern Africa from the Bashee River to South West Africa.

On the basis of the evidence presented above it is possible to summarise the faunistic provinces in southern Africa as follows :

1. The Mocambique-Madagascar province dominated by tropical species. This reaches Lourenco Marques.

2. The Natal province with many tropical species but also fair numbers of endemics and Atlantic species. This reaches Bashee River.

3. The Cape and South West African province dominated by endemics but with a few tropical species and several other components. The intertidal fauna of this province differs on the Indian and Atlantic coasts.

4. Angola is dominated by tropical western African species and is quite distinct from South West Africa. The faunistic boundary between the two is still unknown but probably lies to the north of Cape Frio.

PLANKTONIC POLYCHAETA

Although the larvae of most polychaetes are planktonic and the sexual stages of certain families such as the Syllidae and Nereidae are found at night in tow-nettings over shallow water, the great majority of adult polychaetes are benthonic. Holoplanktonic species belong to six families namely the Phyllodocidae (subfamily Lopadorhynchinae), Pontodoridae, Iospilidae, Alciopidae, Tomopteridae and Typhloscolecidae. Certain genera of the Polynoinae such as *Dreischia* and *Nectochaeta* have also been found in the plankton but these are almost certainly the late larval stages of the benthonic genus *Lepidasthenia*.

The planktonic families are all highly transparent and probably carnivorous though a careful search of the transparent gut has failed to reveal recognisable prey ; on the other hand there is no sign of phytoplankton either. Probably the most highly specialised for planktonic life are the *Tomopteridae* in which setae are replaced by membraneous pinnules and the *Alciopidae* which have enormous eyes as well as vesicula seminales and receptacula seminis for the direct transference of sperm. Useful references to planktonic forms will be found in Greeff (1885), Reibisch (1895), Apstein (1900), Rosa (1908), Southern (1909), Stop-Bowitz (1948), Dales (1957) and Tebble (1963). The earlier workers give descriptions and figures of the various species. Stop-Bowitz provides a useful review, Dales has drawn up a valuable key to most of the species and Tebble has discussed their distribution.

Although they are never common in plankton samples, planktonic polychaetes are very widely distributed and several species occur at great depths. In all the oceans of the world there are probably less than 60 species of which 48 are now reported from the seas around southern Africa. They are typically oceanic and a neritic plankton sample may be distinguished from an oceanic one by the fact that

it contains numerous benthonic larvae but few holoplanktonic forms. A few species may prove useful indicators of specific water masses. Thus *Tomopteris carpenteri* and *Vanadis antarctica* are restricted to the southern oceans south of the subtropical convergence. *Tomopteris dunckeri* on the other hand appears to be restricted to the warm surface layers of the Indian Ocean. *Tomopteris septentrionalis* has been reported from most oceans but the early records were not made with closing nets and thus do not show at what depth the worm was living. In South African seas it is limited to cooler waters; it reaches the surface off the Cape Peninsula but is restricted to much deeper layers off Natal. This submergence under warm water masses may be the key to the wide distribution of many other species as well.

THE MAIN DIAGNOSTIC CHARACTERS OF THE POLYCHAETA

While no attempt will be made to describe the detailed morphology of the Polychaeta, a brief description of external structures is necessary here as an introduction to taxonomic studies. A glossary of technical terms is set out on p. 821. Basically the whole body of a polychaete worm consists of a cephalic lobe or *prostomium*, a segmented body or *metastomium* and a tail end or *pygidium* on which the anus opens. Each is formed from a different part of the *trochophore larva*. The prostomium is formed from the pretrochal region in front of the ciliated girdle or *prototroch*, the pygidium is formed from the posterior end which bears the *telotroch* while the metastomium is formed by segmental division of the part between the prototroch and the telotroch. The most anterior segments are formed first and while the worm grows new segments are continually being formed in front of the pygidium. In most polychaetes additional segments are added throughout life but in a few genera (e.g. *Ophelia*) the number of segments is fixed and is an important specific character.

The Prostomium. This is a pre-oral lobe which contains the cerebral ganglia and bears the most important sense organs. In primitive forms there are two pairs of *eyes*, three *antennae* (a median and two laterals), a pair of ventro-lateral *palps* and a pair of postero-lateral *nuchal organs* in the form of ciliated pits or grooves. In some families such as the Nereidae the distal part of the palp or *palpostyle* is separated from the proximal part or *palpophore* by a deep groove so that the whole palp is two-jointed. All the prostomial sense organs are best developed in the *Polychaeta Errantia* which are usually active carnivores. In the *Polychaeta Sedentaria* which are inactive microphagous feeders the antennae, prostomial palps and even the eyes may be lost and the whole prostomium may be fused too, and indistinguishable from the first metastomial segments or *peristome* which develops food-gathering organs. Even in errantiate forms which have adopted burrowing habits many of the prostomial sense organs are reduced or lost. The antennae may be reduced from three to two or even lost entirely, the palps and eyes may be lost and the prostomium is then reduced to a naked lobe above the mouth as is found in *Lumbrineris*.

The Mouth. This is formed from a stomadeal invagination immediately behind the prototroch in what later becomes the buccal or peristomial segment. In the adult, the buccal cavity is eversible in errantiate families forming a *proboscis* which may be covered with papillae or provided with hard chitinous elements such as the

paragnaths and *jaws* of the Nereidae. These are of course used for feeding but in burrowing forms such as *Nephtys*, *Glycera* and *Arenicola* the eversible proboscis is used for burrowing as well. In filter-feeding tubicolous forms such as *Sabella* and *Serpula* the buccal cavity is not eversible and there is no proboscis.

The Parapodia. In most polychaetes the first segment or the first few segments are modified and joined to the prostomium to form the *head.* This process of cephalisation will be described later but in the most primitive genera the whole body or metastomium consists of numerous similar segments each bearing a pair of lateral *parapodia.* These are typically biramous, with the parapodial trunk dividing to form a dorsal *notopodium* and a ventral *neuropodium.* The two *rami* are basically similar and each consists of a *cirrus* and a *setigerous lobe* bearing chitinous setae (*olim chaetae*) and supported by a stout internal chitinous rod or *aciculum.* There are many modifications of this basic plan and any part of the parapodium may be suppressed either along the whole length of the body or in some part of it. Thus all setae may be lacking so that the parapodium is *achaetous* or the setigerous lobes may fail to develop leaving only the dorsal and ventral cirri and the segment becomes *apodous.* Finally the cirri may be lost or the setigerous lobes may develop without the cirri.

Again the two rami of the parapodium may differ in structure. Usually it is the notopodium which is reduced since it has less contact with the substratum. The dorsal cirrus often persists after the setigerous lobe of the notopodium has gone and the notopodial aciculum may remain embedded in the *cirrophore* or base of the dorsal cirrus. Such a parapodium is termed *sub-biramous* or *sesquiramous.* If however all notopodial setae and acicula are lost the parapodium is truly *uniramous.* In a few cases the whole parapodial projection is lost so that the setae arise directly from the body wall as in the Oligochaeta.

The Setae. These chitinous structures show an infinite variety of form and do not change during preservation. They are thus of great importance in classification and many terms are used to describe them. The simplest forms are slender hair-like structures appropriately called *capillary setae* or just *capillaries.* The distal end of the capillary seta may be flattened to form a blade (*limbate capillary*) or have a central axis with a blade on either side (*winged capillary*). They may be sculptured by the development of spinules, serrations, barbs or cusps. In the Errantia the neurosetae and even the notosetae may be jointed so that the base or shaft articulates with a distal blade or apex. Such setae are termed *compound* in contrast to the normal unjointed or *simple* setae. If the shaft-head of a compound seta is symmetrical it is termed *homogomph* and if asymmetrical it is said to be *heterogomph*; similarly if the distal portion is a tapering blade it is termed *spinigerous* and if it is stout and blunt or hooked it is said to be *falcigerous.* Sometimes a simple seta becomes very stout like a projecting aciculum and is then termed an *acicular seta.* In the Sedentaria in particular, stout spines curved at the end commonly occur in the neuropodia. Earlier workers often referred to these as *crotchets* but they are now usually referred to as *hooks* even if they are only slightly curved. In some families these hooks have their ends protected by delicate bivalve hoods and are appropriately called *hooded hooks.* The most aberrant types of setae found in the Sedentaria are flattened plates provided with recurved teeth. They are termed *uncini* and may be rectangular with

numerous teeth or Z-shaped with a single *main fang* or *rostrum* surrounded by a crest of denticles. Further details are described under the relevant families.

Branchiae. Since the body wall is thin and the parapodia large, special respiratory organs are seldom developed by active forms but they commonly occur in tubicolous or sedentary forms. They may occur on any part of the body but are commonly dorsal in origin either on the dorsum itself or associated with the notopodium. Usually they are thin walled filaments richly supplied with blood but they may become complex branching organs. In filter-feeding fan worms the *branchial crown* on the head serves both as a respiratory organ and a food-gathering apparatus but in the deposit feeders the branchiae are separate from the buccal tentacles and occur on a few segments behind the head.

Body Regions. As in other phyla of segmented animals there is a tendency for groups of segments to become specialised for different functions. The most obvious region is the *head* formed of the prostomium and a few anterior segments which bear the feeding and sensory appendages. In tubicolous forms the head may be further specialised to form an *operculum* or plug when the worm retracts into its tube. Behind the head, tubicolous forms often develop a specialised anterior region or *thorax* often bearing the respiratory organs and behind this a posterior region or *abdomen* with poorly developed parapodia. When the end of the tube is open the last few segments may be specialised as a plug (e.g. the *scaphe* of *Pectinaria*) but usually the end of the tube is closed and the faecal pellets pass forward along a ventral groove or *copragogue* to be voided from the mouth of the tube.

Cephalisation. In its simplest form the head consists of the prostomium and the buccal segment or peristome. Apart from encircling the mouth, the peristome may be a normal segment with fully developed parapodia similar to those which follow. Such a peristome occurs in the family Amphinomidae. Usually however the peristome becomes specialised. In the Errantia the dorsal and ventral cirri often become elongated to act as *tentacular cirri* while the setigerous lobes and setae are reduced or disappear. Various degrees of this type of specialisation of the peristome occur in the Aphroditidae and in the genus *Polynoe* for example, only two or three setae remain at the bases of the tentacular cirri. The next segment however is normal apart from a slight elongation of the ventral cirri. Further cephalisation results in the fusion of additional segments to the peristome, the elongation of their cirri and the loss of their setigerous lobes. The Nereidae have four pairs of tentacular cirri derived from the fusion of two segments which have lost their setigerous lobes. The Phyllodocidae illustrate all stages of fusion of the first three segments and the loss of their setae while the Hesionidae have up to eight pairs of tentacular cirri derived from four segments.

In burrowing forms which ingest organic particles buried in the mud the head is usually very simple and lacks appendages. In the Orbiniidae and Capitellidae for example the prostomium is a simple conical lobe without antennae or palps and the peristomial segment usually lacks both parapodia and setae.

In deposit feeders the head may show many specialisations but usually the prostomium lacks appendages and the peristome or buccal segment develops a pair of

grooved food-gathering appendages called "palps" which pick up the food particles from the surface and convey them to the mouth. These peristomial "palps" arise from the post-trochal region of the larva and thus differ not only in structure and function but also in origin from the sensory palps of the Errantiate families which are pretrochal in origin. They should be given a separate name but it is difficult to conceive one which would not cause confusion and the homologies of other food-gathering organs of the Sedentaria still have to be worked out. The peristomial palps of the Spionidae are certainly homologous with the peristomial palps of *Dodecaceria* and *Tharyx* among the *Cirratulidae*. Further dissection has shown that the numerous grooved tentacular filaments of *Cirriformia* are also peristomial in origin and thus homologous with the "palps". In the Trochochaetidae, grooved peristomial palps are again present but in addition there are three dorsal digitiform appendages possibly derived from the nuchal organs and the whole head is protected by a cephalic cage of long, forwardly directed setae originating from the second segment.

A somewhat similar arrangement is found in the Flabelligeridae. The grooved palps are obviously homologous and the cephalic cage is now formed from setae of two, three or even four segments but the homologies of the "branchial filaments" are uncertain. The prostomium is reduced and fused to the peristomium and both are retractile into an introvert inside the cephalic cage. It is possible that the "branchial filaments" of the Flabelligeridae are homologous with the "nuchal organs of the Trochochaetidae.

The Pectinariidae, Ampharetidae and Terebellidae are another group of deposit feeders which Hessle (1917) has shown to be fairly closely related. The Pectinariidae show the greatest degree of cephalisation for the prostomium is reduced to a cephalic veil protected by two fused segments which have grown forward over the dorsal surface to form an operculum. In the Ampharetidae the prostomium is not greatly modified but in the Terebellidae it is completely fused to the buccal segment to form a *tentacular lobe* from which the food-gathering tentacles arise. According to Hessle (1917) these tentacles arise from the prostomium but the view adopted here is that they arise from the upper lip and are stomadeal in origin. A detailed discussion will be found in the Terebellidae.

The Sabellidae and Serpulidae are suspension feeders which filter the plankton from the water by means of a *branchial crown* on the head. The prostomium is reduced and usually indistinguishable from the peristomium which bears a pair of branchial lobes each divided into a semi-circle of bipinnate *radioles*. When the worm is feeding these radioles form a funnel of interlacing pinnules which trap the food particles in mucus and convey them along ciliated grooves to the palps and mouth. In the Serpulidae one of the radioles is modified to form an *operculum* to plug the tube when the worm retracts.

METHODS

Collection. Polychaetes are one of the commonest groups of marine animals on the sea bottom and on soft substrata they usually form more than a third of all

the species collected. On the other hand most of them are small and seldom contribute greatly to the total biomass. They may be collected by all the methods commonly used in marine biological work and for different purposes hand collecting, digging, dredging and grabbing are used. When sorting through the mud obtained by digging or grabbing it is important to remember than many species of polychaetes measure no more than a few millimetres in length and it is necessary to use a sieve of 1 mm. mesh if the majority of the species are required. A smaller mesh (e.g. 0·25 mm.) will naturally involve more labour and the additional specimens obtained are mainly post-larvae or small juveniles which are very difficult or impossible to identify. In many cases a good deal of sand will be retained by the 1 mm. mesh sieve along with the worms, small crustacea and other animals. This should all be spread out in a shallow sorting tray with a little water. If the tray is tilted so as to expose the mixture of sand and animals for a few seconds and then straightened again so that the water flows back over the mixture, most of the small crustacea which have a hydrophobic surface will be caught on the surface film and may be filtered off through a piece of plankton gauze.

The small worms and sand grains which remain are then sorted by rough sedimentation. The whole mixture is washed into a large jar of 3 to 4 litres capacity and rapidly swirled around. Just sufficient time is allowed for the heavier sand grains to settle and the lighter animals are immediately poured off through a piece of plankton gauze. If this process is repeated five or six times very few worms are left mixed with the sand.

Preservation. When engaged on routine dredging or grab-sampling at sea there is seldom time for elaborate and refined methods of preservation. After hand-sorting and sieving the whole catch is roughly sorted by size and the polychaetes and other small animals are washed into a cloth bag with a station label. The bag is simply placed into a large container, such as a five gallon milk churn, half-filled with 5 per cent formalin in sea water which has been neutralised with hexamine. In this way the polychaete catch may safely be stored for a few months before the formalin acidifies. The formalin/sea-water mixture must then be washed out with freshwater, (the catch sorted to taxonomic groups) and the specimens preserved in 70 per cent alcohol.

When using the rapid bulk methods described above many of the polychaetes will be twisted or broken and if time and facilities permit more refined methods should be used. While still alive the worms are washed in sea water and then relaxed. This may be done either by transferring them to a 7·5 per cent solution of $MgCl_2$ or by adding alcohol drop by drop to the sea water over an hour. A piece of filter paper is then damped with sea water and placed on a slanting sheet of glass. The worms are then straightened out on the filter paper and 70 per cent alcohol pipetted over them until they are dead. With the sudden addition of the strong alcohol the probosces of Phyllodocids, Nereids and Glycerids are often everted and can be held in this position until the worm is fixed in a flat sorting tray of 70 per cent alcohol. None of the worms should be bottled until they are thoroughly hardened in the flat tray.

Dissection and the mounting of parapodia. For taxonomic purposes it is often necessary to dissect out the proboscis to examine the jaws or other structures and it is always necessary to examine the parapodia under a microscope. The proboscis of a large worm may be dissected with a pair of fine scissors but most worms are too small for this and the most useful instrument is a microscalpel shaped like a spear with a blade 2 to 3 millimetres long. If this is kept razor-sharp it is possible to dissect out the proboscis of a 5 mm. worm under a stereo dissecting microscope. For the removal of small parapodia the most useful instrument is a mounted needle which has been filed down to form an oblique cutting edge. It need not be particularly sharp for it is merely used to press down and sever the parapodium against the bottom of a glass dish. The parapodia are then transferred by means of a small pipette to a slide and mounted in a drop of glycero-formol. This is a half and half mixture of 5 per cent formalin and glycerine. The parapodium may be transferred directly to it from the 70 per cent alcohol and if a permanent slide is required the cover slip is later ringed with cement.

THE SYSTEMATICS OF THE POLYCHAETA OF SOUTHERN AFRICA

CLASSIFICATION

The phylum Annelida to which the Polychaeta and several other groups of worms belong, is difficult to classify into classes and orders. Earlier workers included the Archiannelida, Polychaeta, Myzostomida, Oligochaeta, Hirudinea, Echiura, Sipuncula and Priapulida. Recent workers, including Dales (1963), regard the last three groups as distinct and consider each of the other groups as a separate class of the phylum Annelida.

The division of the class Polychaeta into orders has been attempted by Benham (1896) and Dales (1963). They have based their divisions on the structure of the head and the nature of the feeding organs, the regions of the body and the nature of the parapodia and setae. As shown earlier the method of feeding and the habitat whether it be planktonic, active crawling on the surface, burrowing in the mud or tubicolous does have an important effect on the structure of the head and body. However there are still many doubts regarding the homologies of the feeding organs and there is still no general agreement as to which families should be included in the various orders which have been erected. For this reason it is better to leave the matter open and agree with Fauvel (1923) and many earlier workers that for practical purposes the arbitrary grouping into *Polychaeta Errantia* and *Polychaeta Sedentaria* should be used.

The *Polychaeta Errantia* includes active carnivores and a few others while the *Polychaeta Sedentaria* includes the remaining microphagous feeders. There are no mutually exclusive characters which define these two groups and a summation of characters is used in the following key.

Key to the Families of Polychaeta

Note Some families have such a wide range of characters that they appear twice in the key. In these cases a number in brackets refers to the other couplet in which the family appears.

Most of the following characters:
Prostomium with sensory appendages. Pharynx armed with jaws or teeth. Parapodia well developed and often bear compound setae . (Polychaeta Errantia) (p. 20)

Most of the following characters:
Prostomium seldom with sensory appendages and often fused to the peristome which may bear grooved palps, buccal cirri or a branchial crown. No jaws or teeth. Parapodia often reduced and compound setae very rare (Polychaeta Sedentaria) (p. 24 *see also* Part 2)

Polychaeta Errantia

(Part 1)

1 Elytra (dorsal scales) present on many segments, at least in the anterior half of the body (fig. 0.2.1) . . . . . Aphroditidae (p. 30)
– Elytra absent 2
2 Notosetae in transverse rows across the dorsum. (Gills present or absent) . . . 3
– Notosetae not in rows across the dorsum 5
3 Neurosetae compound. Gills absent 4
– Neurosetae simple. Rows of gills alternate with rows of notosetae Amphinomidae (6) (Euphrosine) (p. 120)
4 Notosetae are flattened paleae not supported by membranes. Neurosetae not hooked (fig. 0.2.3) . . . . . Palmyridae (p. 115)
– Notosetae slender and supported by membranes. Neurosetae are stout hooks (fig. 0.3.4) Sphintheridae (p. 119)
5 A sensory lobe (caruncle) behind the prostomium. Setae tubular, never compound (fig. 0.2.2) . . . . . Amphinomidae (4) (p. 120)
– No caruncle behind the prostomium. Setae not tubular, often compound . . . 6
6 Animal entirely planktonic with a clear translucent body 7
– Animal normally benthonic with an opaque body 12
7 Eyes enormous (fig. 0.3.7) . . . . . Alciopidae (p. 172)
– Eyes normal, rudimentary, or absent 8
8 Parapodia of body segments lack setae but have membraneous pinnules (fig. 0.3.3) Tomopteridae (p. 196)
— Parapodia of body segments have setae. Membranous pinnules absent . . . 9
9 Setigerous lobe well developed and setae always compound 10
— Setigerous lobe small and setae always simple and acicular (fig. 0.3.6). (Large foliaceous dorsal and ventral cirri) . . . . . Typhloscolecidae (p. 207)
10 Setigerous lobe produced as a slender thread among the setae (fig. 0.2.4) Pontodoridae (p. 167)
— Setigerous lobe not so produced 11
11 Antennae absent. Body cylindrical (fig. 0.2.3) . . . . . Iospilidae (p. 168)
— Four antennae. Body usually flattened . Phyllodocidae (22) (Lopadorhynchinae) (p. 156)
12 Prostomium with ventro-lateral palps 13
— Prostomium without palps 18
13 Palps bi-articulate with a stout basal joint and a small distal one 14
— Palps simple, sometimes cushion-shaped and partially fused to the prostomium . . 16
14 Compound setae absent. Never more than two pairs of tentacular cirri (fig. 0.2.9) Pilargidae (p. 214)
— Compound setae present. Four or more pairs of tentacular cirri 15

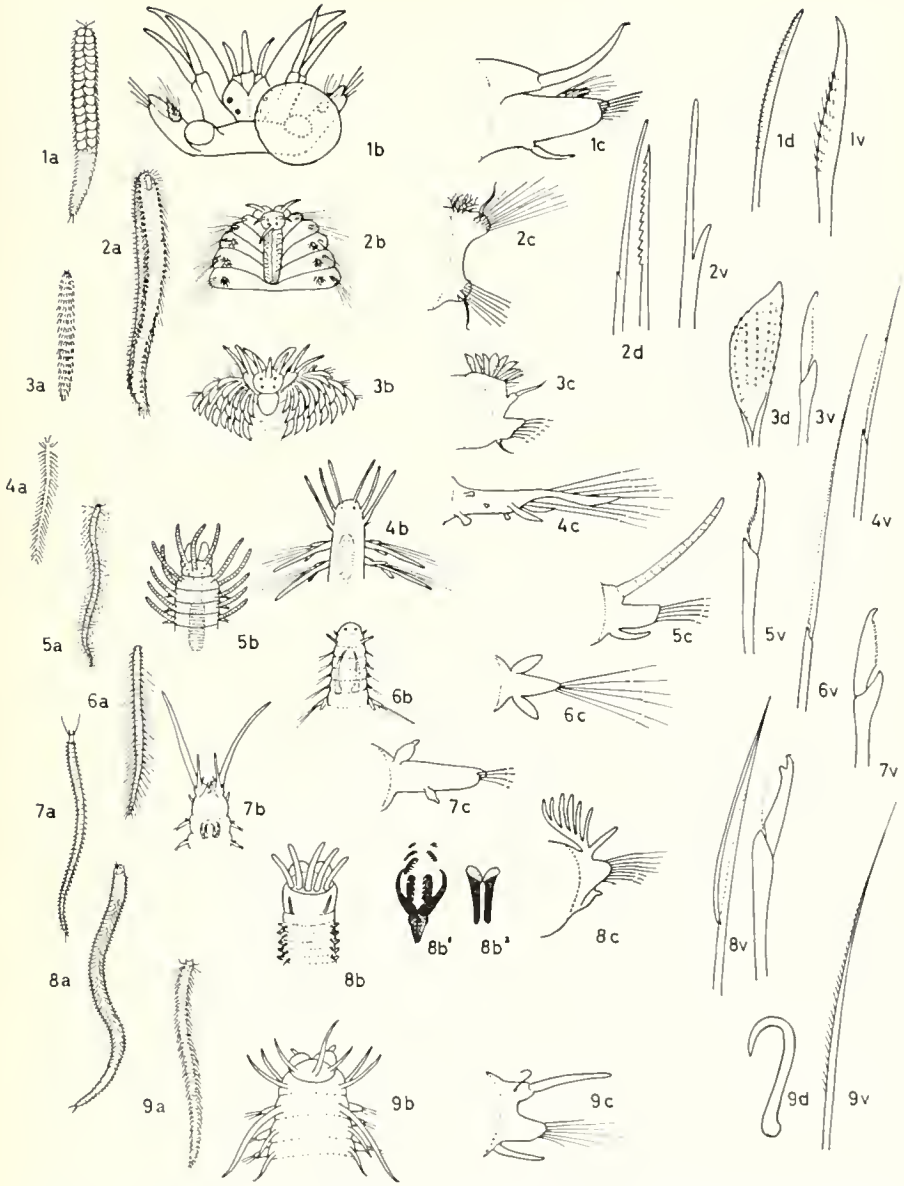

FIG. 0.2. *Illustrations of Family Characters.* 1, Aphroditidae. 2, Amphinomidae. 3, Palymridae. 4, Pontodoridae. 5, Syllidae. 6, Iospilidae. 7, Pisionidae. 8, Eunicidae. 9, Pilargidae. (A) Entire worm. (B) Head; B^1, B^2 maxillae and mandibles. (C) Foot. (D) Notoseta. (V) Neuroseta or seta of uniramous parapodium.

15 Jaws, if present, usually styliform. Denticles absent. Tentacular cirri often jointed (fig. 0.3.1) . . . . . Hesionidae (p. 221)
— Two pairs of toothed jaws always present and often horny denticles as well. Tentacular cirri smooth (fig. 0.3.2) . . . . . Nereidae (p. 291)
16 A barrel-shaped gizzard follows the pharynx (fig. 0.2.5) . . . Syllidae (p. 233)
— Gizzard absent 17
17 Two pairs of jaws. Gills invariably absent (fig. 0.2.7) . . . Pisionidae (p. 132)
Four or more pairs of jaws. Gills may be present (fig. 0.2.8) . . Eunicidae (22) (p. 374)
18 Body papillose. Head indistinct (fig. 0.3.5) . . . . Sphaerodoridae (p. 288)
— Body smooth. Head distinct 19
19 Proboscis without jaws 20
— Proboscis with jaws 21
20 Dorsal cirri lamellar, not annulated. (fig. 0.3.8). (No parapodial lamellae)
Phyllodocidae (13) (p. 136)
— Dorsal cirri long and annulated (fig. 0.3.1). (No parapodial lamellae)
Hesionidae (17) (p. 221)
— Dorsal cirri short and conical, not annulated (Parapodial lamellae present)
Lacydoniidae (p. 350)
21 One pair of jaws . . . . . Pilargidae (16) (Tauberlesapia) (p. 214)
— Two or more pairs of jaws 22
22 Peristome with parapodia and setae 23
— Peristome without parapodia or setae (fig. 0.2.8) . . . . Eunicidae (17) (p. 374)
23 Prostomium a pointed cone. Body circular in section. Parapodia without lamellae (fig. 0.3.10) . . . . . Glyceridae (p. 352)
— Prostomium pentagonal. Body square in section. Parapodia with lamellae (fig. 0.3.9)
Nephtyidae (p. 338)

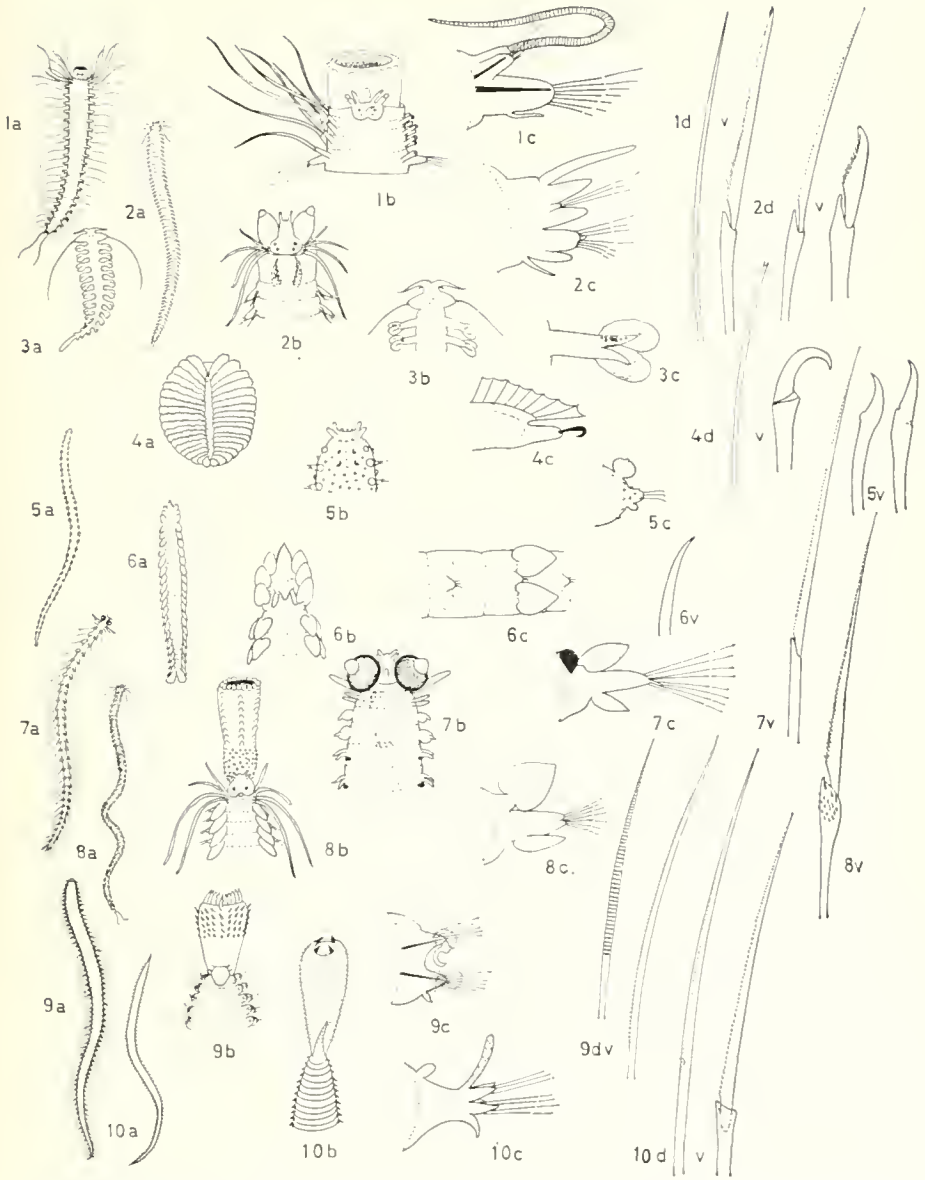

FIG. 0.3. *Illustrations of Family Characters.* 1, Hesionidae. 2, Nereidae. 3, Tomopteridae. 4, Sphintheridae. 5, Sphaerodoridae. 6, Typhloscolecidae. 7, Alciopidae. 8, Phyllodocidae. 9, Nephtyidae. 10, Glyceridae. (A) Entire worm. (B) Head. (C) Foot. (D) Notoseta. (V) Neuroseta or seta of uniramous parapodium.

Polychaeta Sedentaria

(Part 2)

1 Body short and stout with a tuft of filamentous anal gills (fig. 0.5.8) Sternaspidae (p. 648)

— Body elongate. No anal gills 2

2 Head modified by the development of frilly membranes (fig. 0.6.1b), buccal tentacles (fig. 0.6.6) or a branchial crown around the mouth (fig. 0.6.7). Prostomium often reduced and indistinguishable from the buccal segment 17

— Head not greatly modified. Prostomium usually well developed and obvious. Buccal segment sometimes with parapodia and may bear a pair of adhesive palps (fig. 0.4.1b) or a few grooved tentacles (fig. 0.4.6b) 17

3 Buccal segment with tentacles retractile into the mouth (fig. 0.6.5) Ampharetidae (22) (p. 686)

— Buccal segment with a pair of adhesive palps (often broken off) or several grooved tentacles dorsally 4

— Buccal segment without food-gathering appendages of any sort 10

4 Hooded hooks (fig. 0.4.1.v) present in the posterior segments at least. Parapodia always well developed 5

— Hooded hooks entirely absent. Parapodia sometimes reduced to mere ridges . . 6

5 Head flattened and spade-shaped. Gills absent. Palps papillose (fig. 0.4.2) Magelonidae (p. 494)

— Head not flattened. Gills often present. Palps grooved (fig. 0.4.1) . Spionidae (p. 459)

6 Long filamentous gills at least on anterior segments. Parapodia reduced to ridges . 7

— Gills not long and filamentous. Parapodia not in the form of ridges 8

7 Body divided into an anterior region of short segments and a posterior region of long segments (fig. 0.4.5). . . . . Heterospionidae (p. 518)

— Body not divided into regions; segments do not differ greatly in length (fig. 0.4.6) Cirratulidae (p. 498)

8 Both rami of anterior parapodia well developed and provided with long setae (fig. 0.4.4) Trochochaetidae (p. 519)

— Either the notopodium or the neuropodium of anterior segments reduced or absent . 9

9 Anterior segments uniramous having no neuropodia. Posterior segments biramous with neurosetae in the form of minute uncini (fig. 0.4.3) . . Chaetopteridae (p. 522)

— Anterior segments with notopodia reduced to cirriform lobes with an internal aciculum but not setae (fig. 0.4.8) . . . . . Aspitobranchidae (p. 521)

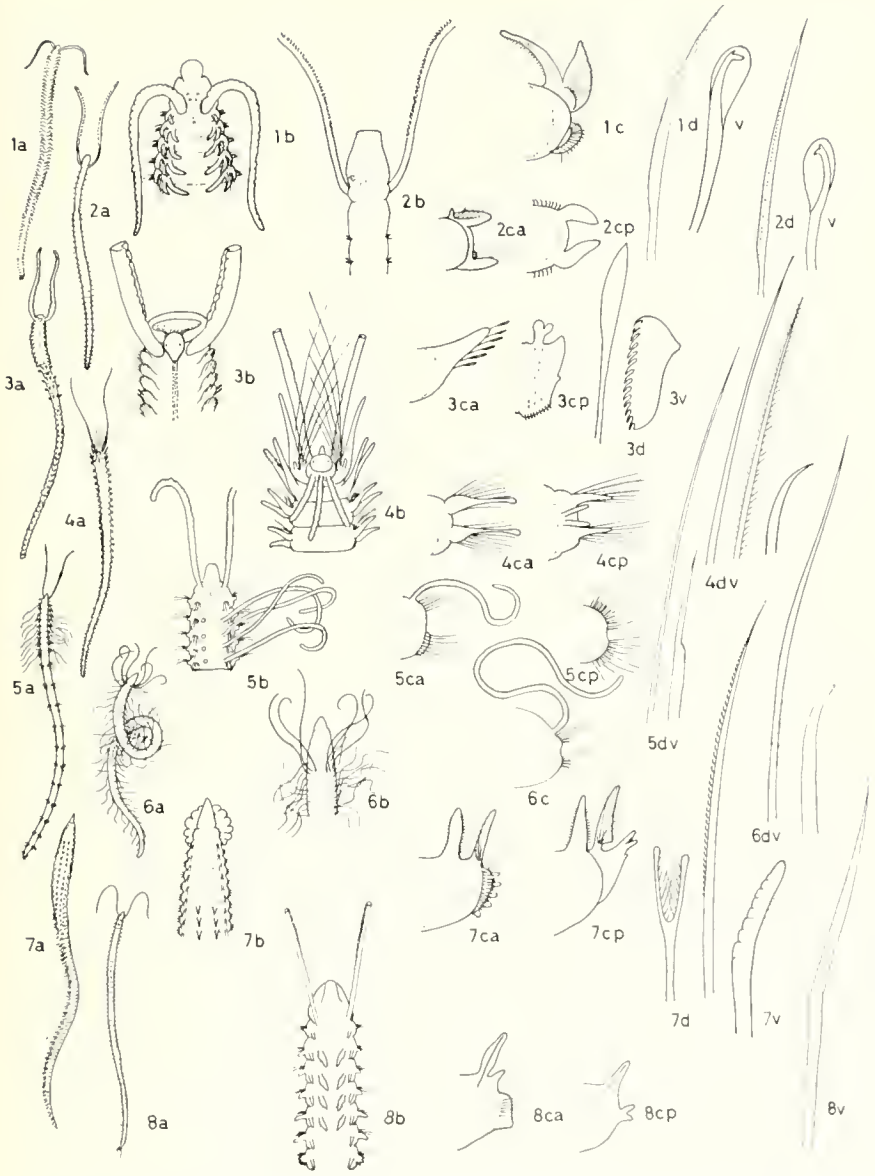

FIG. 0.4. *Illustrations of Family Characters.* 1, Spionidae. 2, Magelonidae. 3, Chaetopteridae. 4, Trochochaetidae. 5, Heterospionidae. 6, Cirratulidae. 7, Orbiniidae. 8, Aspitobranchidae. (A) Entire worm. (B) Head. (CA) Anterior foot. (CP) Posterior foot. (D) Notoseta. (V) Neuroseta.

10 Dentate-crested hooks (fig. 0.5.7v) present in posterior segments if not earlier . . 15
– No dentate-crested hooks 11
11 Capillary setae crenulate (fig. 0.4.7d) . . . . . Orbiniidae (p. 533)
– Capillary setae not crenulate 12
12 A single long filiform gill arising from the dorsum of setiger 2 or 3 (fig. 0.5.3)
Cossuridae (p. 581)
– Gills, if present, not single and median 13
13 Capillary setae winged in anterior segments. A median antenna may be present (fig. 0.5.1)
Paraonidae (p. 555)
– Capillary setae not winged. A median antenna is never present 14
14 Prostomium a tapered cone. Body fusiform, often grooved ventrally (fig. 0.5.2)
Opheliidae (p. 570)
— Prostomium notched or lobed. Body swollen anteriorly but not grooved ventrally (fig. 0.5.4) . . . . . Scalibregmidae (p. 583)
15 Dentate-crested hooks with hoods (fig. 0.5.5). Body resembling an oligochaete
Capitellidae (p. 591)
— Dentate-crested hooks without hoods. Body not resembling an oligochaete . . . 16
16 Middle segments greatly elongated but never annulated (fig. 0.5.7). Gills rare
Maldanidae (p. 613)
— Middle segments not greatly elongated but always annulated (fig. 0.5.6). Gills always present . . . . . Arenicolidae (p. 606)

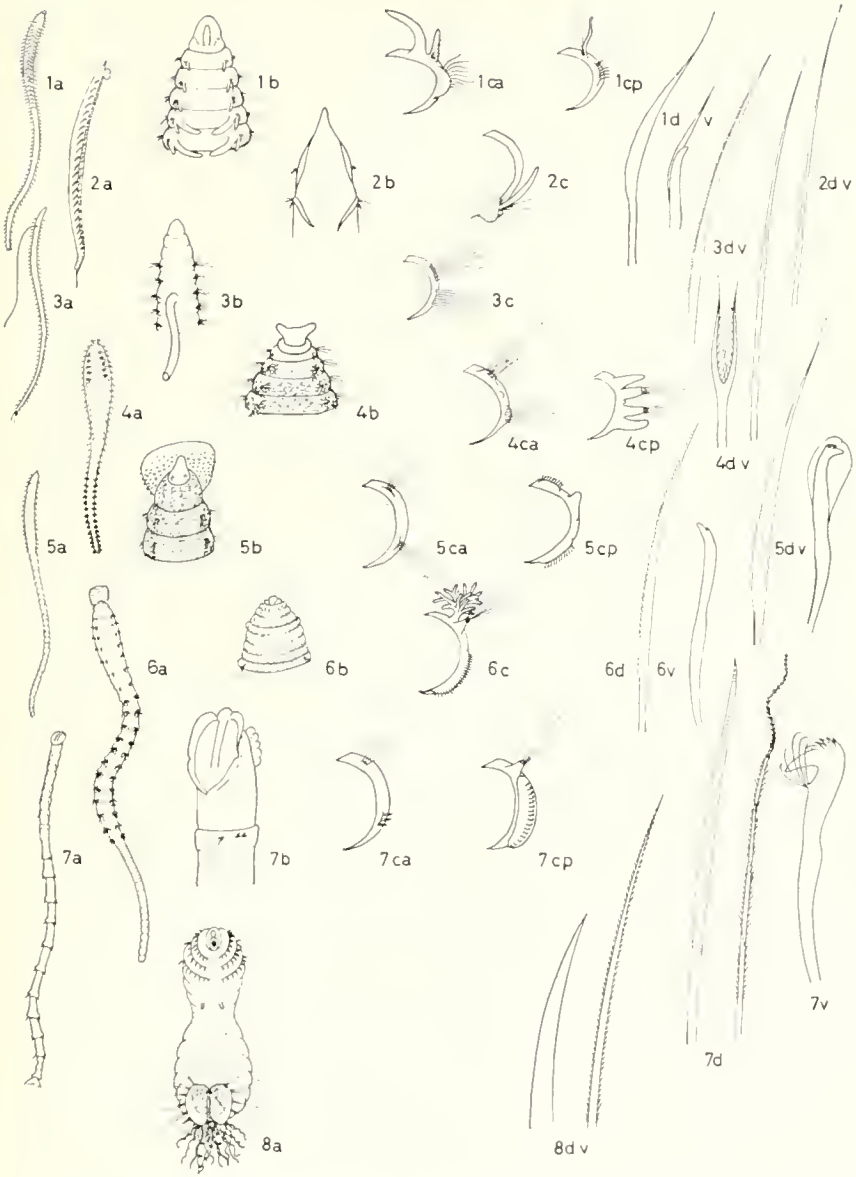

FIG. 0.5. *Illustrations of Family Characters.* 1, Paraonidae. 2, Opheliidae. 3, Cossuridae. 4, Scalibregmidae. 5, Capitellidae. 6, Arenicolidae. 7, Maldanidae. 8, Sternaspidae. (A) Entire worm. (B) Head. (CA) Anterior foot. (CP) Posterior foot. (D) Notoscta. (V) Neuroseta.

17 Head usually with a frilled food-gathering membrane. Never any tentacles, palps or bipinnate radioles (fig. 0.6.1) . . . . . OWENIIDAE (p. 649)

— Head without a frilled food-gathering membrane but has either tentacles or palps or bipinnate radioles 18

18 Head with stout setae 19

Head without setae 21

19 Capillary setae annulated. No marked body regions. Setae on head usually in the form of a cephalic cage (fig. 0.6.2) . . . . . FLABELLIGERIDAE (p. 652)

— Capillary setae not annulated. Body regions well marked. Setae on head are paleae which form part of an operculum 20

20 Two to three rows of paleae. Caudal region long and cylindrical. Tube attached (fig. 0.6.3) . . . . . SABELLARIIDAE (p. 667)

— One row of paleae. Caudal region short and flattened. Tube free (fig. 0.6.4) PECTINARIIDAE (p. 678)

21 Head with soft tentacles for deposit feeding. Gills often present on the first few segments. Setal types not inverted in the posterior region 22

— Head with a crown of bipinnate radioles (fig. 0.6.7) for suspension feeding. No gills behind the head. Setal types inverted in the posterior region 23

22 Tentacles retractile into the mouth. They are either grooved or papillose (fig. 0.6.5) AMPHARETIDAE (3) (p. 686)

— Tentacles not retractile into the mouth. They are grooved, never papillose (fig. 0.6.6) TEREBELLIDAE (p. 706)

23 Tube sandy or muddy. An operculum is never present among the radioles (fig. 0.6.7) SABELLIDAE (p. 751)

— Tube calcareous. A stalked operculum often present among the radioles (fig. 0.6.8) SERPULIDAE (p. 791)

FIG. 0.6. *Illustrations of Family Characters.* 1, Oweniidae. 2, Flabelligeridae. 3, Sabellariidae. 4, Pectinariidae. 5, Ampharetidae. 6, Terebellidae. 7, Sabellidae. 8, Serpulidae. (A) Entire worm. (B) Head. (CA) Anterior foot. (CP) Posterior foot. (D) Notoseta. (H) Palea from operculum. (T) Tube. (V) Neuroseta.

Family **APHRODITIDAE** Savigny, 1818

Body usually depressed and dorsum partially or completely covered with scale-like elytra. Prostomium rounded and sunk back between the anterior parapodia. It bears 1–3 antennae, 1–2 pairs of eyes and a pair of cirriform palps. Proboscis eversible and often armed with four jaws. Peristomial segment with reduced parapodia bearing a few setae but the cirri are elongated and tentacular. Subsequent parapodia almost always biramous. Dorsal cirri alternate with elytra anteriorly but are variously developed posteriorly, sometimes present on all segments and sometimes completely replaced by elytra. Ventral cirri present on all segments. Notosetae always simple and usually serrated. Neurosetae are simple except in the subfamily Sigalioninae.

Note on the subfamilies

Some authors have considered the group to be one family with four subfamilies; others have raised it to the rank of a superfamily with four separate families. This is largely a matter of personal preference but as the four subgroups are more closely related to one another than the majority of the families of the Polychaeta, they are here considered as subfamilies. The distinctions between them present no difficulties and the diagnostic characters of the genera are discussed later.

Key to Subfamilies

1 Compound neurosetae present. All posterior segments bear elytra . Sigalioninae (p. 97)
– No compound setae at all. Elytra and dorsal cirri alternate fairly regularly . . 2

2 No horny jaws. Eyes often stalked. Only a single median antenna. Dorsum sometimes covered by a felt; harpoon setae may be present . . . . Aphroditinae (p. 30)
– Four horny jaws. Eyes stalked or sessile. 0–3 antennae. Both felt and harpoon setae absent 3

3 Spinning glands present in the notopodia. Eyes stalked or sessile. Three antennae, or less sometimes absent . . . . . Polyodontinae (p. 93)
– Spinning glands absent. Eyes sessile. Always three antennae . . Polynoinae (p. 36)

Subfamily **APHRODITINAE** Savigny, 1818
(=HERMIONINAE Grube, 1875)

Body oval with few segments. Prostomium with a single median antenna. Eyes usually stalked. A well developed facial tubercle on the upper lip. No horny jaws. Body covered with 15–20 pairs of elytra which occur on segments 2, 4, 5, 7, . . . and alternate with the dorsal cirri. Parapodia biramous ; Notosetae include both fine silky setae forming the felt and stout spines among which there may be harpoon-setae on the elytrigerous segments. Neurosetae simple, sometimes forked.

Records from southern Africa

Aphrodita alta Kinberg . . .	32Csd, Ps, Ns, 50Cd, 55Ca
Hermonia hystrix (Savigny) . .	—Pd
as *Hermione hystrix* (Savigny) .	31As, 32Cd
? as *Laetmonice filicornis* Kinberg .	32Csd, vd

Laetmonice benthaliana McIntosh .	55Ca
as *Laetmonice wyvillei* (non McI.) .	52Cvd, a
Laetmonice producta wyvillei McIntosh	
as *Laetmonice producta* (non Grube)	36Pd
Pontogenia chrysocoma (Baird) . .	27Mi, 40Pi

BIOLOGICAL NOTES

Aphrodita and its allies are slow moving worms which live on soft muddy bottoms. Photographs sometimes show the tracks where *Aphrodita* has plowed along through the silt, feeding on detritus and microscopic animals for it lacks jaws and is not an active predator. Instead its alimentary canal bulges out between the septa to form a segmental series of pouched caeca. The thick felt of silky setae on the dorsum covers the elytra and keeps them clean to act as respiratory organs. *Laetmonice* extends down to abyssal levels and its caeca are often distended with foraminifera.

THE MAIN DIAGNOSTIC CHARACTERS

The body. The shape and number of segments is a useful character and in some species the last few segments are narrowed to form a tail.

The head. The most useful characters are the eyes which may be sessile or borne on short broad stalks (*ommatophores*). Either type may lack ocular pigment.

Elytra. There are usually 15 pairs, more is diagnostic. The surface is usually smooth except in the genus *Pontogenia.*

Cirri and parapodia. The dorsal cirri are usually slender with knobbed tips but the ventral cirri are variable and in *Laetmonice* provide useful characters. The parapodia and ventrum are often papillose to varying degrees.

Setae. The nature of the setae is very important but it should be noted that the character of the dorsal spines or harpoon setae may differ from elytrigerous to cirrigerous segments and from the anterior to the posterior end. When present the felt formed by fine silky setae is diagnostic, but in *Laetmonice* the felt is so fragile that it may be lost during collection so that mere traces remain.

Key to Genera

1	Harpoon-shaped dorsal spines present (fig 1.1.g)	2
–	No harpoon-shaped dorsal spines	3
2	Neurosate with one to four spurs but no fringe of hairs (fig 1.1.e . .	***HERMONIA***
–	Neurosatae with one spur and a fringe of hairs (fig 1.1.h)	***LAETMONICE***
3	Body oval. Notosatae include both stout spines and fine setae forming a thick felt (fig 1.1.n)	***APHRODITA***
–	Body oblong. Notosatae include flattened serrated paleae (fig 1.1.t) and fine capillaries forming a felt	***PONTOGENIA***

HERMONIA Hartman, 1959

Body oval and depressed. Prostomium with a single antenna and swollen eye-stalks (ommatophores). Fifteen pairs of elytra. Notosetae of elytrigerous feet include harpoon-setae, stout spines and a few small capillaries. Notosetae of cirrigerous feet

are more slender and harpoon-setae are absent. No felt. Neurosetae few, stout and bifurcate, often with one or more accessory teeth but not fringed with hairs.

Type species: *Halithea hystrix* Savigny, 1818.

Hermonia hystrix (Savigny, 1820)
(fig. 1.1.a–e)

Halithea hystrix Savigny, 1820 : 20.
Hermione hystrix : Fauvel, 1923 : 35, fig. 11.

Body oval and depressed (fig. 1.1.a), about 30–40 mm. long with 32–34 setigers. Prostomium (fig. 1.1.b) small and rounded with a slender median antenna arising from a stout ceratophore. A pair of swollen ommatophores each bearing two eyespots. Fifteen pairs of smooth elytra. Notosetae of elytrigerous feet include (a) very long harpoon-setae, (b) sabre-setae (fig. 1.1.d) and (c) a few small capillaries. Notosetae of cirrigerous feet (fig. 1.1.c) smaller and lack harpoon-setae. Neurosetae (fig. 1.1.e) bifurcate, the longer prong having one to four accessory teeth but no fringe of hairs. Ventral surface papillose.

Type locality : Mediterranean.

Records : Cape (31/15/vd) ; ? Natal (29/31/s) ; Mocambique (24/35/d) – occasional specimens.

Distribution : Northern Atlantic from Scotland to Senegal (s, d) ; Mediterranean (s) ; Red Sea ; Indian Ocean (s) ; (?) Japan.

LAETMONICE Kinberg, 1855

Body oval and depressed, with 32–46 segments. A papillose facial tubercle. Prostomium rounded with a single median antenna and two stout ommatophores. Fifteen to twenty pairs of smooth elytra which cover the dorsum. Notosetae of elytrigerous feet include harpoon-setae, acicular setae and capillaries ; notosetae of cirrigerous feet lack harpoon-setae but the silky capillaries may form a felt. Neurosetae bifurcate with a fringe of hairs on the longer limb.

Type species : *Laetmonice filicornis* Kinberg, 1855.

Key to Species

1 Eighteen to twenty pairs of elytra 2
– Fifteen pairs of elytra 3
2 A pair of purse-shaped lobes at the sides of the prostomium. Ventrum densely papillose
L. producta*
– No purse-shaped lobes at the sides of the prostomium. Ventrum almost smooth
L. producta wyvillei
3 Ventrum densely papillose. Ventral cirri just reach the bases of the inferior neurosetae
L. filicornis*
– Ventrum smooth or almost so. Ventral cirri small and never reach the bases of the inferior neuroseta (fig. 1.1.l) . . . . . ***L. benthaliana***

*Not recorded from southern Africa.

Laetmonice producta wyvillei McIntosh, 1885

Laetmonice producta var. *wyvillei* McIntosh, 1885 : 44.
Laetmonice producta (non Grube) : Day, 1934 : 18.
Laetmonice producta wyvillei : Day, 1963a : 357.

Body almost oblong, up to 35 mm. long for 42 segments. Ventrum smooth with only a few papillae between the parapodia. Ocular peduncles not pigmented. No lobes on the tentacular segment at the sides of the prostomium. Eighteen pairs of elytra. Notopodia with mere vestiges of felt. Notosetae of elytrigerous segments stouter than those of cirrigerous ones and include long harpoon-setae. Ventral cirri small and weak and never reach the bases of the inferior neurosetae.

Type locality : Subantarctic (53°S/108°E) in 1950 fth.

Records : Mocambique (26/33/vd).

Distribution : Subantarctic (abyssal).

Laetmonice benthaliana McIntosh, 1885
(fig. 1.1.f–l)

Laetmonice producta var. *benthaliana* McIntosh, 1885 : 45, pl. 8 figs. 4–5, pl. 4A fig. 12, pl. 5A figs. 1–2.
Laetmonice benthaliana : Day, 1963 : 356.

Body a flattened oval (fig. 1.1.j), up to 30 mm. long for 32–36 segments. Ventrum smooth with only a few papillae between the parapodia. Ocular penducles (fig. 1.1.k) not pigmented. No lobes on the tentacular segment at the sides of the prostomium. Fifteen pairs of elytra covered by a very delicate felt. Notosetae of elytrigerous feet stouter than those of cirrigerous feet and include long harpoon-setae (fig. 1.1.g). Neurosetae (fig. 1.1.h) with a spur at the base of the feathered apex. Ventral cirri (fig. 1.1.l) small and weak and never reach the bases of the inferior neurosetae.

Type locality : Prince Edward Is.

Records : Cape (33/16/a, 34/17/a, 34/18/vd, ?33/18/s) – common on globigerina ooze.

Distribution : Subantarctic (vd, a).

APHRODITA Linnaeus, 1758

Body oval, arched dorsally and tapered posteriorly with 35–45 segments. Prostomium with a single median antenna and a pair of large sessile eyes which may lack pigment. The whole dorsum is covered with a tough felt and the ventrum is usually papillose. Fifteen pairs of smooth elytra hidden under the felt. Notosetae include stout acicular spines and long fine capillaries which form the felt. No harpoon-setae. Neurosetae very stout and acicular and arranged in three tiers.

Type species : *Aphrodita aculeata* Linnaeus, 1758.

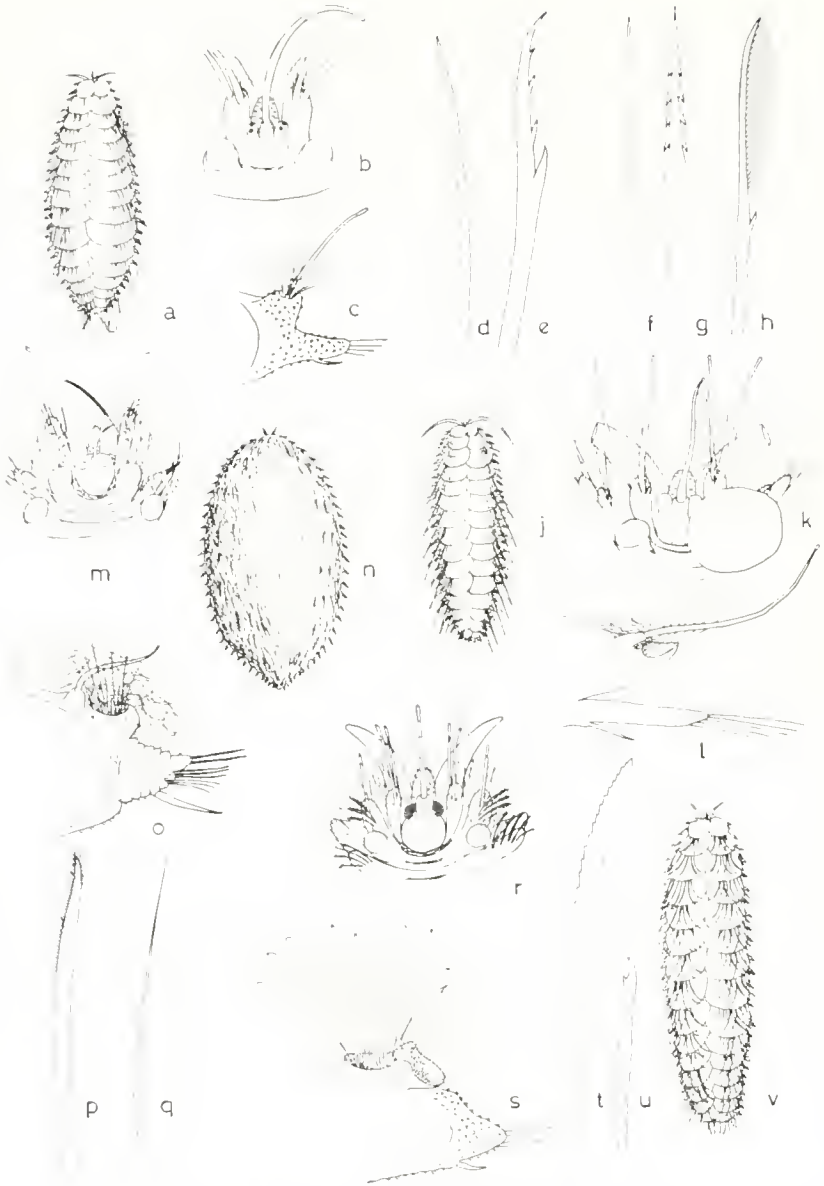

FIG. 11. *Hermonia hystrix*. (A) Entire animal (natural size). (B) Head. (C) Cirrigerous foot. (D) Sabre-seta. (E) Bifurcate neuroseta with three accessory teeth. *Laetmonice benthaliana*. (F) Smooth notoseta. (G) Harpoon seta. (H) Neuroseta. (J) Entire animal (natural size). (K) Head. (L) Parapodium. *Aphrodita alta*. (M) Head. (N) Entire animal (1·5 times life size). (O) Cirrigerous foot. (P) Neuroseta. (Q) Notoseta. *Pontogenia chrysocoma*. (R) Head. (S) Parapodium. (T) Sabre-seta. (U) Spurred neuroseta. (V) Entire animal (1·5 times life size).

Aphrodita alta Kinberg, 1855
(fig. 1.1.m–q)

Aphrodita alta Kinberg, 1855 : 381; Kinberg, 1910 : 2, pl. 1 fig. 1 a–h ; Day, 1960 : 274.

Body (fig. 1.1.n) oval in plan, about 30 mm. long and flattened ventrally with 37–40 segments. The last few segments are tapered but there is no obvious tail. Median antenna small and slender with a slight swelling near the tip. Prostomium (fig. 1.1.m) rounded with large, lightly pigmented ocular swellings. Felt well developed so that it almost covers the short acicular notosetae. Parapodia (fig. 1.1.o) short, stout and papillose. Notosetae with hooked tips (fig. 1.1.q) and shafts which are minutely hairy proximately and minutely nodular distally. Neuropodial spines (fig. 1.1.p) brown, each with a bent pilose tip. Ventrum papillose.

Type locality : Rio de Janeiro.

Records : Cape (31/16/s and 34/16/a to 34/25/d) ; Natal (29/31/s, 30/31/s) ; Mocambique (26/32/d).

Distribution : Brazil (s) ; Senegal (s) ; Antarctica (d).

PONTOGENIA Claparède, 1868

Body oblong and arched dorsally with 30–40 segments. Prostomium with a single median antenna and stalked eyes. A well developed facial tubercle. Fifteen pairs of elytra. Notosetae include large, flattened sabrelike setae and often fine capillaries forming a felt. No harpoon-setae. Neurosetae few, stout and spurred. Parapodia and ventrum often papillose.

Type species : *Hermione chrysocoma* Baird, 1865.

Pontogenia chrysocoma (Baird, 1865)
(fig. 1.1.r–v)

Hermione chrysocoma Baird, 1865 : 178.
Pontogenia chrysocoma : Fauvel, 1923 : 38, fig. 13 a–f.

Body (fig. 1.1.v) oblong, up to 40 mm. long with 34 segments. Dorsum arched and dark brown. Parapodia (fig. 1.1.s) and ventrum papillose. Prostomium (fig. 1.1.r) small with four eyes borne on a pair of divergent peduncles ; median antenna with four unequal joints. Facial tubercle papillose. Fifteen pairs of elytra bearing a few small chitinous tubercles. Notosetae include (a) a fan of large erect, sabre-like paleae (fig. 1.1.t) which are dentate on the convex margin ; (b) a few short capillaries and (c) a bundle of very long fine capillaries which form the felt. Neurosetae (fig. 1.1.u) few and stout with a very small spur below the apex.

Type locality : Naples.

Records : Natal (30/30/s, 29/32/s) ; Mocambique (26/32/i) – few specimens.

Distribution : Mediterranean (s) ; Zanzibar (i) ; Madagascar (i) ; Morocco (i, s).

Subfamily **POLYNOINAE** Malmgren, 1867

Body depressed with seldom more than 50 segments. Prostomium bilobed with four sessile eyes and three antennae. Proboscis with four chitinous jaws and often a facial tubercle on the upper lip. No dorsal felt and no spinning glands in the notopodia. Setae simple in both rami, usually with rows of serrations. Elytra alternate more or less regularly with the dorsal cirri anteriorly and are present on segments 2, 4, 5, 7, 9, etc., but are irregular or absent posteriorly.

Records from southern Africa

Acholoe squamosa (Delle Chiaje) . .
as *Acholoe orbiculata* Treadwell . . 39Ai
Alentia australis (Monro) . . .
as *Hololepida australis* Monro . . 50Cd
Antinoe epitoca Monro 33As, 56Cs
Antinoe lactea Day 41Ci, 50Cs
Drieschia pelagica Michaelsen . . . —Np
Eunoe assimilis McIntosh . . . 32Cd, 55Ca
Eunoe hubrechti (McIntosh) . . .
as *Lagisca hubrechti* (McIntosh) . . 33Cd
Eunoe macrophthalma McIntosh . . 32Cd
Eunoe nodulosa Day . . . . —Ci
Euphione elisabethae McIntosh . . . 10Cd, 13Cd, 15Csd, 32Cd, Ps, 33Cd, 50Cd
Gastrolepidia clavigera Schmarda . . 27Mi, 28Mi, 53Pi, Mi
Gattyana mossambica Day. . . . 53Pi
Halosydna (*Hyperhalosydna*) *alleni* Day . 36Ci, 40Ci, 41Ci
Harmothoe acquiseta (Kinberg) . . . 26Wis, 35Ci, 41Ci, 50Cs
as *Antinoe acquiseta* Kinberg . . 3Ni
as *Parmensis capensis* Willey . . . 12Ci
as *Harmothoe crosetensis* (non McIntosh) . 33Cs
? as *Lagisca extenuata* (non Grube) . 21Ci
Harmothoe agulhana Day 50Cs
Harmothoe acquiseta africana Augener . .
as *Harmothoe africana* Augener . . 26Ai, 50Cs
Harmothoe antilopis McIntosh . . . 56Cd, —Cs
Harmothoe corralophila Day . . . 50Csd
Harmothoe dictyophora (Grube) . . . 23Ni, 27Mi, 40Ni, 41Ci
as *Parmensis reticulata* McIntosh . . 32Pi
Harmothoe fraserthomsoni McIntosh . . ?39Ai, 41Ci, 50Cs
Harmothoe gorcensis Augener . . . 26As, 45Pi, 50Cs
Harmothoe gilchristi Day 50Cs
Harmothoe lagisceides serrata Day . . 56Cd
Harmothoe lunulata (Delle Chiaje) . . 45Pi, 50Cs, 53Pi
Harmothoe profunda Day 55Ca

Harmothoe saldanha Day 41Ci, 50Cs
Harmothoe (*Lagisca*) *waahli* (Kinberg) . 31Cs, 35Ci, 36Ci, 41Ci, 50Cs
Harmothoe sp. 55Ca
Hermenia acantholepis (Grube) . . . —Ms
Iphione muricata (Savigny) . . . 23Ni, 27Mi, 40Pi, Ni
as *Polynoe muricata* Savigny . . . 1Pi
as *Iphione spinosa* Kinberg . . . 3Ni
Lepidasthenia brunnea Day . . . 50Cs, 52Cd
Lepidasthenia elegans (Grube) . . . 50Cs
Lepidasthenia maculata Potts . . . 45Pi
Lepidasthenia mossambica Day . . . 53Pi
Lepidasthenia microlepis Potts . . . 23Ni, 40Ni
Lepidasthenia sp. 50Cd
Lepidonotus carinulatus Grube . . . 27Mi, 28Mi
Lepidonotus cristatus (Grube) . . . 40Pi, 53Mi
Lepidonotus durbanensis Day . . . 36Ni, 40Ni, 50Cs
Lepidonotus glaucus (Peters) . . . 45Pi
as *Polynoe glauca* Peters . . . 1Pi
as *Lepidonotus platycirrus* Day . . 40Ni
Lepidonotus jacksoni Kinberg . . . —Ms
Lepidonotus (*Thormora*) *jukesi* Baird . . 45Pi
as *Lepidonotus trissochaetus* (Grube) . . 27Mi
Lepidonotus magnatuberculatus Seidler . . ?30Ni
Lepidonotus purpureus Potts . . . 45Pi, 53Pi
Lepidonotus semitectus Stimpson . . 2Ci, 11Wi, 15Cs, 16Wi, 21Ci, 23Ni, 26Wis, 33Cs, 35Ci
as *Lepidonotus semicinctus* Kinberg . . 7Ni
as *Polynoe trochiscophora* Schmarda . . 4Ci
as *Lepidonotus wahlbergi* Kinberg . . 3Ni, Ci, 10Ci, 13Ci, 32Cis
as *Lepidonotus clava* (non Montagu) . 39Ai
as *Lepidonotus clava* var. *semitecta* (Stimps.) 12Ci, 36Ci, Ni, 40Ni, 41Ci, Wi, 50Cs
Lepidonotus tenuisetosus (Gravier) . . 27Mi, 41Ci, 53Mi, Ni
as *Lepidonotus natalensis* Day . . . 40Ni
as *Lepidonotus hupferi* Augener . . 26As
Macellicephala mirabilis McIntosh . . 13Cd, 32Cd
Malmgrenia marquesensis (Monro) . 53Pi
Malmgrenia purpurea Day . . . 50Cs
Parahalosydna capensis (McIntosh) . .
as *Polynoe capensis* McIntosh . . 10Cd
Paralepidonotus ampulliferus (Grube) . .
as *Harmothoe ampullifera* (Grube) . . 45Pi

Paralepidonotus indicus (Potts)	45Pi
Pareulepis geayi (Fauvel)	45Ni, Pi, 53Mi
as *Eulepis geayi* Fauvel	27Mi, 40Pi
Polyeunoa laevis McIntosh	13Cd, 50Csd
as *Hemilepidia erythrotaenia* (non Schmarda)	32Cd
as *Polynoe agnae* McIntosh	32Cd
? as *Polynoe caputleonis* McIntosh	32Cd
Polyeunoa nigropunctata (Horst)	
as *Hololepidella nigropunctata* (Horst)	45Pi
Polynoe erythrotaenia (Schmarda)	41Ci, 50Cs
as *Hemilepidia erythrotaenia* Schmarda	4Ci, 11Wi, 12Ci
as *Eunoe capensis* McIntosh	10Ci, 13Ci
Polynoe scolopendrina Savigny	12Ci, 31Cs, 32Ci, 35Ci, 36Ci, 41Ci, 50Cs
as *Polynoe attenuata* McIntosh	10Ci
as *Hemilepidia tuberculata* Schmarda	4Ci, 13Ci, 21Ci
Pseudopolynoe inhaca (Day)	53Pi
as *Allmaniella inhaca* (Day)	45Pi
as *Polynoe inhaca* Day	40Pi
Scalisetosus fragilis (Claparède)	—Ns, Ms
as *Scalisetosus pellucidus* (Ehlers)	23Ci, 33Cs, 41Ci, 50Cs
as *Scalisetosus communis* Delle Chiaje	21Ci
Scalisetosus longicirrus (Schmarda)	53Pi

BIOLOGICAL NOTES

The polynoids are a group of slow moving predators feeding on small prey in spite of their strong jaws. Many of them are phosphorescent and they are famous for their commensal habits. Different genera live with a wide variety of invertebrate hosts. *Acholoe*, *Malmgrenia* and *Gastrolepidia* live with asteroids, echinoids and holothurians while many species of *Harmothoe*, *Polynoe* and *Lepidasthenia* live with tubicolous worms, particularly polychaetes. One species is even commensal with the sea-anemone *Bolocera* and *Harmothoe corralophila* lives in tube-shaped galls on the branches of a stylasterid coral. By way of contrast, most of the species of *Lepidonotus* are free-living. Some genera such as *Pareulepis* and *Antinoe* prefer sandy habitats while others, such as *Iphione* and *Lepidonotus* live under stones and dead coral. Many free-living species of *Harmothoe* occur on shelly bottoms and there seems to be a tendency for those species whose elytra are fringed with long papillae to tolerate more silty conditions. Possibly the fringe keeps the silt from getting underneath the elytra where respirations takes place and where the developing eggs are carried by several species.

THE MAIN DIAGNOSTIC CHARACTERS

The head. The most important features are the arrangement of the antennae on the prostomium, the presence or absence of frontal peaks and the position of the anterior pair of eyes. The antennae, tentacular cirri and dorsal cirri are essentially

similar in structure so that if one is lost a good idea of its characters may be gained from those that remain. Each consists of a basal *ceratophore* and a distal *ceratostyle* which is usually much longer. The ceratophores of the *median* and two *lateral antennae* may all arise from the anterior margin of the prostomium so that the lateral antennae are smoothly continuous with the prostomium. This occurs in *Lepidonotus* (fig. 1.2.e) whose lateral antennae are said to be *terminal* in origin. The ceratophores of the lateral antennae may also arise from the ventral surface of the prostomium as in *Harmothoe* (fig. 1.2.a) whose lateral antennae are said to be *ventral* in origin. In this case the prostomium bulges forward on either side of the median antenna and may develop chitinised projections called *antero-lateral horns* or preferably *prostomial peaks*. Again the median antenna may arise from the antero-dorsal surface of the prostomium and then the laterals, though still arising from the anterior margin, are at a slightly lower level than the median and tend to push under it. This occurs in *Alentia* (fig. 1.2.c) whose lateral antennae are said to be *subterminal*. A subterminal effect may also be developed in a different way. In *Malmgrenia* (fig. 1.2.b) the ceratophores of the lateral antennae actually arise from the ventral surface of the prostomium but they are fused to it along their length and slant upwards so that when the prostomium is viewed from above it appears that the laterals arise from its anterior margin though at a slightly lower level than the median. This condition is best confirmed by turning the worm on its back and bending the head upwards. This method also permits an examination of the upper lip which sometimes develops a projection or *facial tubercle*. As stated, the median antenna may be antero-dorsal in origin. It may even arise from the middle of the dorsal surface as in *Pareulepis* (fig. 1.2.f) or even from the posterior margin. In this position it is reduced to a papilla which may be concealed under a projecting fold of the first segment called an *occipital fold* or *collar*. This happens in *Iphione*. Early workers seeing only the large lateral antennae described the type species *I. muricata* as having only two antennae.

The elytra. These vary in size from mere caps on the *elytrophores* to large scales which cover the whole dorsum. Commonly they extend over the whole length of the body (as may be checked by the disposition of the elytrophores if the elytra are missing), but in some forms such as *Polynoe* only the anterior half of the body develops elytra and the posterior half is naked and may develop fleshy *dorsal tubercles*. Segments which bear dorsal cirri (*cirrigerous* segments) commonly bear fleshy dorsal swellings corresponding to the elytrophores showing that dorsal cirri and elytra are not homologous organs. In the genus *Euphione* these swellings form a pair of transversely elongated ridges across the segment (*paraelytrophores*) and both they and the cirrophores bear *branchial papillae*. Early workers made much of the detailed segmental arrangement of *elytrigerous* and *cirrigerous* feet, but in the subfamily Polynoinae this is of doubtful value. On anterior segments the elytra occur on segments 2, 4, 5, 7, 9, . . . and alternate segments (or segments 1, 2, 4, 6, 8, . . . if the tentacular segment is not counted) while the arrangement on posterior segments is very variable. The outline shapes of the elytra also change along the body but the ornamentation is of great specific importance. Basically there are two structures. First the soft cylindrical *papillae* which may form a fringe on the postero-lateral margin or spread over the surface ; second the strongly chitinised *tubercles*, though intermediate forms are

not unknown. The tubercles may be limited to the anterior area which is covered by the preceding elytron and thus presumably ensures a free flow of the respiratory current between the two surfaces or the tubercles may cover the whole elytron. Their shape is variable from species to species, from anterior to posterior elytra and even on different parts of the same elytron. Moreover their thick chitin prevents the rapid inflow of viscid mounting media and shrinkage effects are produced such as ridges, projections and star-like shapes. For all these reasons it is best to examine the elytra first on the intact worm preserved in alcohol to determine the characters of the tubercles of the anterior elytra where they are best developed and then to remove an anterior elytron plus the next complete foot with a dorsal cirrus, brush both to remove adherent debris and examine under high power bearing in mind the effects of the mounting medium.

The parapodia and setae. The dorsal cirrus itself may be smooth or have "cilia" or minute papillae. The notopodium may be well developed or be reduced to a mere papilla with an internal aciculum so that the foot is uniramous or *sesquiramous*. The neuropodium has a *presetal lip* which may be produced into a cirriform structure and a shorter *postsetal lip*. The distal half of the notoseta is *serrated* to varying degrees ; it may be completely encircled by rows of minute cusps or these may be limited to one side and if only the other side is visible the seta appears smooth. Often the tip is smooth or *naked* or may be grooved between the flanges which form the cusps further back. The neurosetae have rather longer, finer projections known as *spinules* which are sometimes long enough to produce a bearded effect. The tips of the neurosetae may taper to fine points but commonly they end in a strong hook or *terminal tooth* with or without a *secondary tooth* (*bidentate* and *unidentate* conditions). The secondary tooth is best developed in the middle of the fan of neurosetae and the slender *superior* neurosetae and stout *inferior* ones may be unidentate while the middle ones are minutely bidentate.

GENERIC GROUPING

For the reasons given earlier, the polynoeids are here regarded as a subfamily of the Aphroditidae and not as an independent family. Discussions regarding the whole group or sections of it will be found in Darboux 1899, Potts 1910, Bergström 1916, Horst 1917a, Chamberlin 1919, Fauvel 1923, and Seidler 1922, 1923 and 1924. Grube's 1875 and 1876 also Seidler's works contain the most complete reviews.

It is generally agreed that the numerous genera are best grouped according to the arrangement of the antennae. Seidler follows Horst in recognising three subfamilies of the Polynoidae [sic]. These are the Iphioninae, the Lepidonotinae and the Harmothoinae. The Iphioninae were distinguished by the lack of a median antenna but as noted earlier a median antenna is actually present far back on the prostomium. Another genus, *Macellicephala*, which was reported to lack lateral antennae has in fact got small caducous laterals as well as a median and it is probable that all polynoeids have three antennae.

The Lepidonotinae are well defined by having all three antennae arising terminally from the anterior margin of the prostomium ; similarly the Harmothoinae all have the median antenna terminal and the lateral antennae ventral in origin. But if one

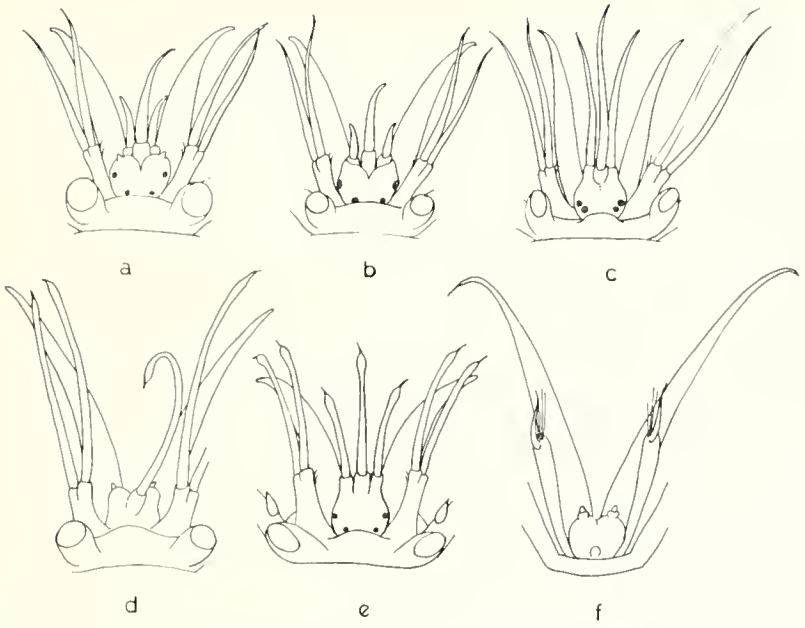

FIG. 1.2. Insertion of antennae on the head. (A) *Harmothoe*. (B) *Malmgrenia*. (C) *Alentia*. (D) *Macellicephala*. (E) *Lepidonotus*. (F) *Pareulepis*.

accepts these two major groups of genera one must go further and erect a third group with the lateral antennae subterminal as in *Malmgrenia*, a fourth with the median antenna antero-dorsal as in *Alentia* and a fifth with the median antenna mid-dorsal to postero-dorsal as in *Iphione*, *Macellicephala*, *Allmaniella* and *Pareulepis*.

It would in fact be advantageous to divide the polynoeids into five groups in this way but unfortunately these divisions are not clear cut nor are they backed up by simultaneous differences in other characters such as the number of segments or the number of elytra. For these reasons the generic groupings are not recognised in the present work.

KEY TO GENERA

1 Lateral antennae arise from a lower level of the prostomium than the median which may be antero-dorsal to postero-dorsal in origin 2
– Lateral antennae arise from the same level as the median, all three being terminal in origin 20
2 Median antenna arises from the dorsal surface of the prostomium, sometimes far back (fig. 1.2.d and f). Lateral antennae always terminal. Eight to thirteen pairs of elytra 3
– Median antenna arises from the anterior or antero-dorsal part of the prostomium. Laterals either terminal or ventral in origin (fig. 1.2.a–c). Fifteen or more pairs of elytra . 6
3 Median antenna well developed and antero-dorsal 4
– Median antenna a small postero-dorsal papilla usually hidden by the occipital fold . 5

4 Lateral antennae well developed . . . . . ***ALLMANIELLA****
– Lateral antennae minute, often lost (fig. 1.2.b) . . ***MACELLICEPHALA*** (p. 44)
5 Notosetae are all fine capillaries. Prostomium markedly bilobed . ***IPHIONE*** (p. 43)
– Notosetae are of two types (a) long and fine, (b) stout and bent. Prostomium not markedly bilobed . . . . . ***PAREULEPIS*** (p. 45)
6 Median antenna antero-dorsal in origin and laterals terminal (fig. 1.2.c) ***ALENTIA*** (p. 44)
– Median antenna terminal in origin and laterals subterminal or ventral (fig. 1.2.a or b) 7
7 Lateral antennae subterminal, their bases slanting up to the same level as the base of the median. Prostomial peaks never present (fig. 1.2.b) 8
- Lateral antennae ventral, their bases projecting at a lower level than that of the median. Prostomial peaks usually present (fig. 1.2.c) 11
8 Body short with 15 pairs of elytra 9
– Body long with 20 or more pairs of elytra 10
9 Ventral lamellae present (fig. 1.5.c). Notosetae well serrated ***PARALEPIDONOTUS*** (p. 47)
- Ventral lamellae absent. Notosetae weakly serrated to smooth . ***MALMGRENIA*** (p. 48)
10 Large ventral lamellae present (fig. 1.5.c). No branchial tubercles ***GASTROLEPIDIA*** (p. 51)
— Ventral lamellae absent. A bilobed branchial tubercle on cirrigerous segments (fig. 1.5.k) ***ACHOLOE*** (p. 52)
11 Eighteen to twenty-eight pairs of elytra covering the dorsum . . ***POLYEUNOA*** (p. 52)
— Fifteen pairs of elytra 12
12 Body elongated ; posterior half not covered by elytra (fig. 1.6.a) . ***POLYNOE*** (p. 55)
— Body short, mainly or entirely covered by elytra 13
13 Neurosetae with blades tapering to fine tips (fig. 1.6.w) . . . ***ANTINOE*** (p. 57)
— Neurosetae with blades ending in stout, often hooked tips. 14
14 Neurosetae with tridentate tips . . . . . ***GOREKIA****
— Neurosetae with unidentate or bidentate tips 15
15 Neurosetae with the distal spinules very long and hair-like . . ***AUSTROLAENILLA****
— Neurosetae with the distal serrations normal 16
16 One or more of the basal serrations on both the notosetae and neurosetae enlarged to form spinous pockets (fig. 1.7.j, k) . . . . . ***SCALISETOSUS*** (p. 58)
— Basal serrations on the setae not enlarged, often smaller than subsequent ones . . 17
17 Notosetae much finer than the neurosetae . . . . . ***GATTYANA*** (p. 61)
— Notosetae as stout or stouter than the neurosetae 18
18 Notosetae with the distal spinules long and hair-like. (Neurosetae normal) . ***BARRUKIA****
— Notosetae with the distal spinules decreasing in size. 19
19 Notosetae much stouter than the neurosetae which are mainly or entirely unidentate (fig. 1.7.s–u) . . . . . ***EUNOE*** (p. 61)
— Notosetae not markedly stouter than the neurosetae which are mainly or entirely bidentate ***HARMOTHOE*** (p. 64)
20 Planktonic forms (probably larval stages of benthonic genera). Notosetae absent, neurosetae mainly long and slender 21
— Benthonic forms with normal neurosetae 22
21 Thirteen pairs of elytra and long elytrophores (fig. 1.12.f) . . ***DRIESCHIA*** (p. 75)
— Eighteen pairs of elytra . . . . . ***HARMOPSIDES****
22 Twelve pairs of elytra 23
— Fourteen or more pairs of elytra 26
23 Posterior elytra reduced. Notosetae few or absent . . . . ***HERMENIA*** (p. 77)
— Posterior elytra not reduced. Notosetae well developed and numerous . . . 24
24 Elytrophores and cirrophores with branchial papillae (fig. 1.13.d). Notosetae all long, fine and silky 25
— No branchial papillae. Notosetae vary in length . . . ***LEPIDONOTUS*** (p. 79)

25 Neurosetae have blades with stout spinules. Cirrigerous segments without paraelytrophotes (flat transverse ridges) . . . . . ***CHAETACANTHUS****
— Neurosetae have blades with long fine spinules giving a bearded effect (fig. 1.13.f). Cirrigerous segments with paraelytrophores (transverse ridges) . ***EUPHIONE*** (p. 76)
26 Fifteen pairs of elytra mainly or entirely covering the dorsum (fig. 1.15.z). Notosetae present . . . . . ***PARAHALOSYDNA*** (p. 86)
— Fifteen to seventeen pairs of elytra limited to the anterior half of the body (fig. 1.15.e). Notosetae present . . . . . ***PSEUDOPOLYNOE*** (p. 86)
— Eighteen to twenty-two pairs of elytra covering most of the dorsum (fig. 1.15.k). A few notosetae usually present in all parapodia . . . . ***HALOSYDNA*** (p. 88)
— Twenty-four or more pairs of elytra extending over the whole length of the body. Notosetae absent or restricted to a few anterior parapodia . ***LEPIDASTHENIA*** (p. 88)

IPHIONE Kinberg, 1855

Body short, oval and completely covered with 13 pairs of large, imbricating elytra. Lateral antennae inserted terminally at the anterior end of the prostomium. Median antenna very small and inserted so far back that it is usually hidden by the nuchal fold. A facial tubercle present. Notosetae very fine. Neurosetae stout and unidentate.

Type species : *Polynoe muricata* Savigny, 1818.

Key to Species

1 Elytra with lateral fringes . . . . . ***I. muricata***
– Elytra not fringed . . . . . ***I. ovata****

Iphione muricata (Savigny, 1818) (fig. 1.3.a–f)

Polynoe muricata Savigny, 1818 : 308, pl. 3 fig. 1.
Iphione muricata : Gravier, 1901 : 226, pl. 9 figs. 129–135 ; Fauvel, 1953 : 32, fig. 13 a–e.

Body (fig. 1.3.a) oval and up to 20 mm. long with 29 segments. It is arched dorsally and completely covered with 13 pairs of tough imbricating elytra. Prostomium (fig. 1.3.b) square and deeply bilobed. Lateral antennae terminal with large ceratophores fused to the facial tubercle. Median antenna represented by a small papilla postero-dorsal in position and usually hidden under the nuchal fold. Eyes small and both pairs posterior. Elytra (fig. 1.3.d) large, reniform and tough ; they are divided into punctate polygonal areas with one to two rows of stout chitinous projections and long adhesive papillae near the posterior margin. Dorsal and ventral cirri papillose. Notopodium (fig. 1.3.c) short and bears numerous very fine biserrate capillaries (see fig. 1.3.c). Neuropodium large and truncate with numerous stout unidentate setae (fig. 1.3.f) ornamented with transverse striations.

Type locality : Suez.

Records : Cape (31/29/i) ; Natal (30/30/i to 28/32/i) ; Mocambique (26/32/i) – fairly common under stones.

Distribution : Red Sea (i) and Indo-Pacific reaching Madagascar (i, s), Zanzibar (i), the Philippine Is. (i) and Japan.

ALENTIA Malmgren, 1865

(Characters amended to include *Hololepida* Moore, 1905)

Body elongate with 45–120 segments and 18–30 or more pairs of elytra which extend over the whole length of the body. Prostomium narrowed anteriorly and broad posteriorly. Median antenna antero-dorsal in origin ; laterals terminal but partly under the median. An occipital flap present. Notopodium small and tapered with slender, minutely spinulose setae. Neuropodium with a pointed presetal lobe and setae of two types : (a) a superior group of slender unidentate setae and (b) an inferior group of stouter bidentate setae.

Type species : *Polynoe gelatinosa* Sars, 1835

Alentia australis (Monro, 1936)
(fig. 1.3.g–m)

Hololepida australis Monro, 1936 : 93, fig. 9 a–h ; Day, 1960 : 287.

Body elongate and flattened, over 95 mm. long with more than 59 segments. Prostomium (fig. 1.3.g) with the lateral antennae terminal in origin but the median more dorsal. Two pairs of large eyes both laterally situated. Antennae smooth and about three times the length of the prostomium. Palps long. A marked facial tubercle and a large occipital flap. Dorsal cirri (fig. 1.3.h) long and smooth. Elytra large and smooth with a scattering of small, three-pronged tubercles (fig. 1.3.j) on the surface. Notopodium (fig. 1.3.h) small with a few long smooth capillaries (fig. 1.3.k). Neuropodium large and pointed. Superior neurosetae (fig. 1.3.l) slender and lanceolate with denticulate tips. Inferior neurosetae (fig. 1.3.m) numerous and bidentate with smooth slanting pockets along the blade.

type locality : South Georgia.

Records : Cape (31/16/d).

Distribution : South Georgia and off the Falkland Is. (d).

MACELLICEPHALA McIntosh, 1885

Body short with 18–30 segments. Prostomium markedly bilobed. No prostomial peaks. Median antenna large and dorsal in origin. Laterals minute and arise from the anterior ends of the prostomial lobes but are often lost. Facial tubercle prominent. Eyes usually absent. Eight to thirteen pairs of elytra which cover the dorsum. Notosetae few or absent. No setae on the tentacular segment. Neuropodium with a long presetal lip. Neurosetae transparent with long, spear-shaped tips.

Type species : *Macellicephala mirabilis* McIntosh, 1885.

Macellicephala mirabilis (McIntosh, 1885)
(fig. 1.3.n–p)

Polynoe (*Macellicephala*) *mirabilis* McIntosh, 1885 : 121, pl. 16 fig. 1, pl. 12A figs. 9–11.

Body purple, up to 30 mm. long with 18 segments. Prostomium (fig. 1.3.n) with a pair of large, forwardly projecting lobes bearing minute lateral antennae at their ends though they are often broken off. Median antenna very large, smooth and arises from the dorsal surface. No eyes. Nine to ten pairs of elytra which cover the dorsum. Elytra deciduous, structure unknown. Dorsal cirri (fig. 1.3.o) long, smooth and slightly expanded at the tip. Notosetae few, stout and lack serrations. No setae on the tentacular segment. Neurosetae (fig. 1.3.p) long with slightly expanded, spear-shaped tips and weak serrations. No secondary tooth. Large nephridial papillae on segments 10–12.

Type locality : Deep dredging off New Zealand.

Records : Cape (33/17/vd and 34/17/vd) – occasional specimens.

Distribution : South Georgia ; New Zealand ; North Atlantic ; North Pacific.

PAREULEPIS Darboux, 1899

Body oblong with 35–40 segments. Prostomium largely covered by an adherent nuchal fold. Median antenna reduced and dorsal in origin. Lateral antennae inserted terminally. Twelve pairs of elytra. Notosetae of two types : (a) long and fine, (b) stout and bent. Neurosetae include a superior pectinate seta and numerous recurved ones with long smooth points.

Type species : *Eulepis hamifera* Grube, 1878.

Pareulepis geayi (Fauvel, 1918)
(fig. 1.3.q–u)

Eulepis geayi Fauvel, 1918 : 503. Fauvel, 1919 : 335, pl. 15 figs. 17–21 ; pl. 17 figs. 76–79.

Body (fig. 1.3.q) up to 35 mm. long, oblong in shape with 36–38 setigers. Colour white. Prostomium (fig. 1.3.r) broader than long but sunk back between anterior segments and attached in the median line to an overlying fold of setiger 2. Median antenna ovoid, dorsal in origin ; lateral antennae conical, terminal in origin. Eyes absent or represented by indistinct dark pigment. Dorsum covered by 12 pairs of tough, glabrous elytra which increase in length posteriorly so that the 12th is two to three times as long as broad. First pair of elytra with three to four soft papillae near the anterior margin; subsequent ones (fig. 1.3.s) have the external margin incised to form 10–12 digitiform processes none of which is jointed ; 12th elytron with 15–18 processes. Dorsal cirrophores large and ridged ventrally ; dorsal cirri small, conical, smooth. Ventral cirri small and ovoid with a terminal filament. Anal cirri exceedingly long and slender. Notopodium short ; notosetae of setiger 1 all long and silky ; notosetae of subsequent feet of two types : (a) long silky capillaries

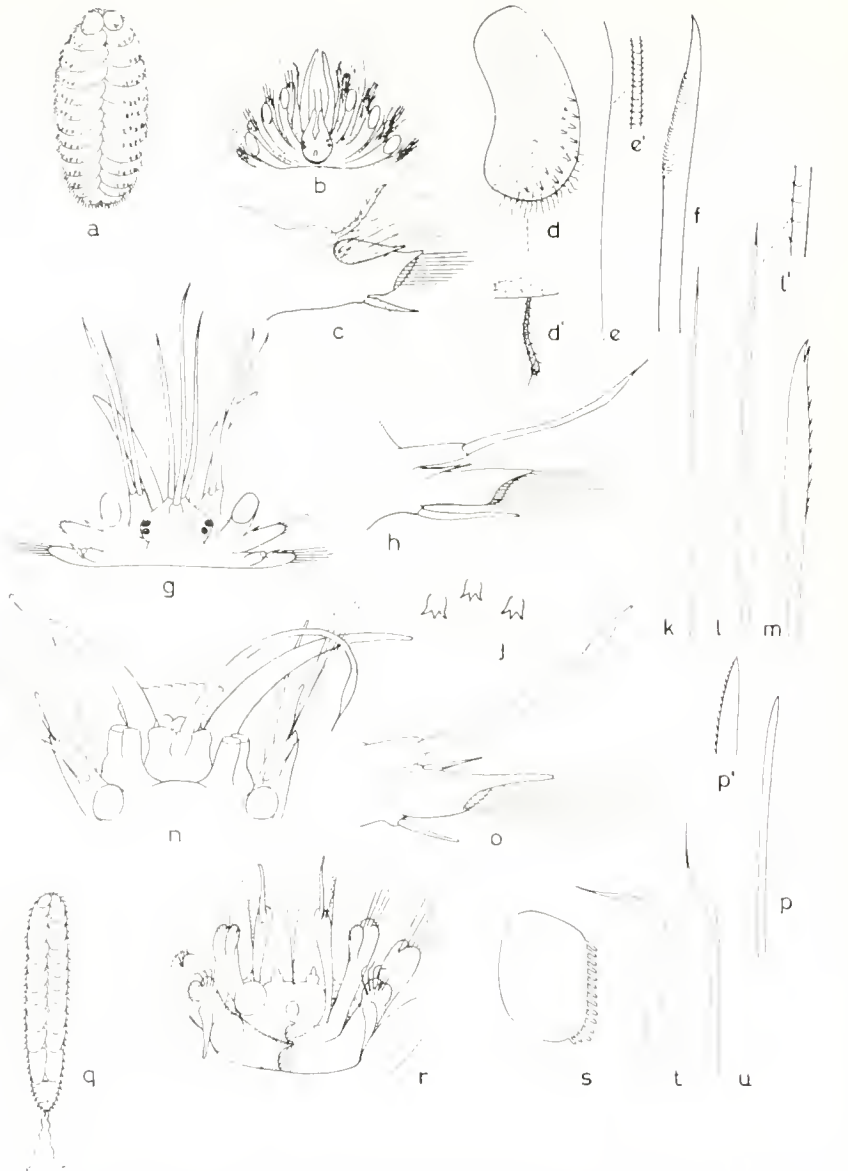

FIG. 1.3. *Iphione muricata*. (A) Entire animal (1·5 times life size). (B) Head. (C) Parapodium (D, D[1]) Elytron and details of marginal papilla. (F, E[1]) Notoseta and details of serrations. (F) Neuroseta. *Alentia australis*. (G) Head. (H) Parapodium. (J) Elytral papillae. (K) Notoseta. (L, L[1]) Superior neuroseta and details of serrations. (M) Middle neuroseta. *Macellicephala mirabilis*. (N) Head. (O) Parapodium. (P, P[1]) Neuroseta with details of serrations. *Parculepis geayi*. (Q) Entire animal (natural size). (R) Head with segments 2 and 3 cut away on the right side. (S) Elytron. (T) Stout acicular notoseta. (U) Neuroseta.

some of which are spinulose and (b) stout brown setae (fig. 1.3.t) with the flattened and spathulate tip bent at right angles to the shaft. Neuropodium truncate with the aciculum expanded at the tip. Neurosetae include (a) one superior pectinate seta and (b) numerous large recurved setae (fig. 1.3.u) tapering to fine unidentate tips.

Type locality : Tulear, Madagascar.

Records : Natal (30/30/s and 29/31/i, s, d) ; Mocambique (26/32/i). Fairly common on sheltered sandbanks.

Distribution : Indo-west-Pacific; Red Sea; Madagascar; New Caledonia.

PARALEPIDONOTUS Horst, 1915

Body short with about 35–40 segments almost covered by 15 pairs of elytra. Prostomial peaks absent and lateral antennae inserted subterminally. The median is antero-dorsal in origin and the laterals slant upward from below to appear at a slightly lower level than the median. Notosetae serrated and all similar. Neurosetae bidentate. Ventral lamellae present.

Type species : *Polynoe ampullifera* Grube, 1878.

Key to Species

1 Elytra with small blunt tubercles and large vesicles (fig. 1.4.b[1]) near the posterior margin which has a small fringe . . . . . ***P. ampulliferus***

– Elytra with small dark spines. No posterior vesicles but a well developed marginal fringe ***P. indicus***

Paralepidonotus ampulliferus (Grube, 1878)
(fig. 1.4.a–f)

Polynoe ampullifera Grube, 1878 : 35, pl. 3 fig. 5.
Lepidonotus ampulliferus : Gravier, 1901 : 214, pl. 7 figs. 111–113.
Harmothoe ampullifera : Day, 1957 : 64.

Body (fig. 1.4.a) oblong, up to 17 mm. long for 38 segments and mainly covered by 15 pairs of elytra. Prostomium (fig. 1.4.c) without lateral peaks and the lateral antennae inserted subterminally below the level of the median. Anterior pair of eyes lateral and well back. Median antenna slender and 1·5 times the length of the prostomium ; laterals 3/4 prostomium. Dorsal cirri (fig. 1.4.d) long and reach the tips of the neurosetae. Antennae and cirri papillose. Elytra (fig. 1.4.b) oval with a small marginal fringe ; the surface bears numerous small tubercles which may have two or three blunt projections. A series of large pear-shaped vesicles near the posterior margins of the elytra. Ventral lamellae conspicuous. Notosetae (fig. 1.4.e)

numerous and coarsely serrated to their blunt tips. Neurosetae (fig. 1.4.f) slender and mainly bidentate with the fine secondary tooth almost as long as the terminal one.

Type locality : Philippine Is.

Records : Mocambique (23/35/e) rare.

Distribution : Red Sea (i) ; tropical Indo-Pacific from Mombasa (i, s) to the Philippine Is.

Paralepidonotus indicus (Potts, 1910)
(fig. 1.4.g–k)

Lagisca indica Potts, 1910 : 338, pl. 19 fig. 13, pl. 21 figs. 46–47.
Paralepidonotus indicus : Day, 1957 : 62, fig. 1 g–k.

Body oblong, up to 16 mm. long for 36 segments and completely covered by 15 pairs of elytra. Prostomium (fig. 1.4.g) without lateral peaks and with the lateral antennae inserted subterminally. Eyes large, the anterior pair being antero-lateral in position. Median antenna three times the length of the prostomium ; laterals twice the prostomial length. Antennae and dorsal cirri (fig. 1.4.i) slender, densely covered with papillae and each with a subterminal swelling. Ventral lamellae present. Each elytron (fig. 1.4.h) with a transverse arc of dark pigment and densely covered with small dark spines. Posterior margin (fig. 1.4.h[1]) fringed with papillae but there are no large vesicles. Notosetae (fig. 1.4.i) stout and spinulose to their tips. Neurosetae (fig. 1.4.k) slender with long blades bearing many rows of spinules ; tips bidentate. The secondary tooth is best developed among the middle setae and is then straight and slender.

Type locality : Amirante, Maldives.

Records : Mocambique (26/32/i, 25/33/s).

Distribution : Maldives (i).

MALMGRENIA McIntosh, 1874

Body oblong with 36–41 segments completely covered by 15 pairs of elytra. Prostomium without frontal peaks and lateral antennae inserted subterminally. Median antenna terminal in origin but the bases of the laterals are fused to the lower surface of the prostomium and slant upwards to its anterior margin. Notosetae fairly numerous, stout and weakly serrated. Neurosetae unidentate or minutely bidentate.

Type species : *Malmgrenia whiteavesi* McIntosh, 1874.

Key to Species

1 Notosetae with numerous rows of very faint serrations (fig. 1.4.l). Dorsal cirri short and stout . . . . . ***M. purpurea***
– Notosetae with a single series of eight–twelve denticles (fig. 1.4.p). Dorsal cirri long and tapered . . . . . ***M. marquesensis***

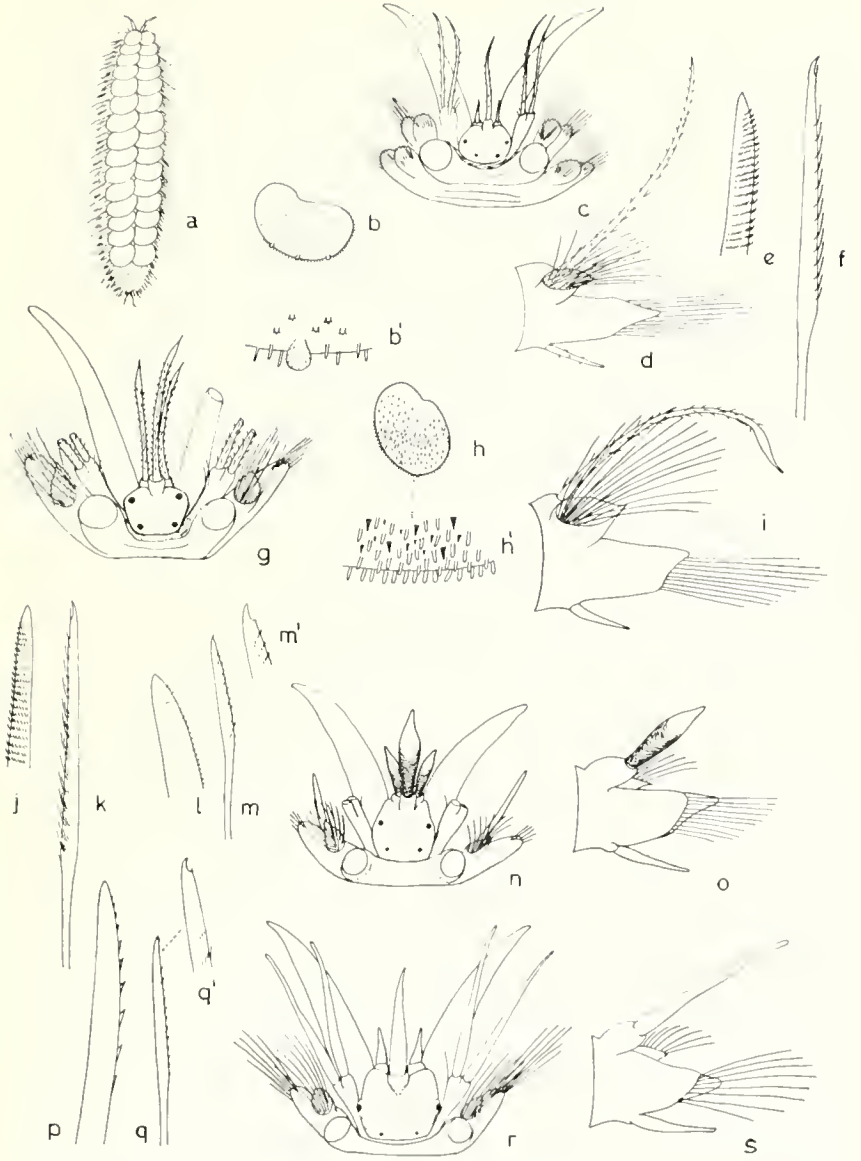

FIG. 1.4. *Paralepidonotus ampulliferus*. (A) Entire animal (twice life size). (B, B[1]) Elytron and details of margin. (C) Head. (D) Parapodium. (E) Tip of notoseta. (F) Neuroseta. *Paralepidonotus indicus*. (G) Head. (H, H[1]) Elytron and details of margin. (I) Parapodium. (J) Tip of notoseta. (K) Neuroseta. *Malmgrenia purpurea*. (L) Tip of notoseta. (M, M[1]) Neuroseta and details of tip. (N) Head. (O) Parapodium. *Malmgrenia marquesensis*. (P) Blade of notoseta. (Q, Q[1]) Neuroseta and details of tip. (R) Head. (S) Parapodium.

Malmgrenia purpurea Day, 1960
(fig. 1.4.l–o)

Malmgrenia purpurea Day, 1960 : 281, fig. 2 f–k.

Body oblong, up to 17 mm. long with 38 segments and purple in colour. Prostomium (fig. 1.4.n) longer than broad with rather small eyes, the anterior pair being lateral and half-way back. Median antenna very stout and as long as the prostomium ; laterals half as long. A well marked facial tubercle. Tentacular cirri short with a single seta. Antennae and cirri (fig. 1.4.o) smooth, swollen and darkly pigmented. Elytra oval with smooth margins. The surface is also smooth apart from a small anterior patch of rounded tubercles. Notopodia small with about 12 setae. Neuropodia large, each with a pointed presetal lip. Ventral lamellae rudimentary. Notosetae (fig. 1.4.l) stout, curved and transparent, the convex margin being very lightly serrated and the tip being abruptly pointed. Neurosetae (fig. 1.4.m) numerous, fairly short and slender with the blades bearing about 25 rows of fine spinules ; their tips are sharp and hooked and some have a minute secondary tooth. Animal probably commensal with *Spatangus capensis*.

Type locality : False Bay, South Africa.

Records : Cape (34/18/s, d to 34/23/d).

Distribution : Endemic.

Malmgrenia marquesensis (Monro, 1928)
(fig. 1.4.p–s)

Allmaniella marquesensis Monro, 1928 : 469, figs. 1–4.
Malmgrenia marquesensis : Day, 1962 : 628.

Body oblong, up to 20 mm. long with mauve markings when fresh but mottled brown in alcohol with a white ridge across each segment. Prostomium (fig. 1.4.r) hexagonal with the anterior pair of eyes large and halfway back on lateral prominences. Median antenna longer than prostomium. Lateral antennae inserted subterminally, markedly tapered and borne on broad ceratophores. A well marked facial tubercle. Palps stout ; tentacular cirri slender. Dorsal cirri (fig. 1.4.s) evenly tapered and reach the ends of the neurosetae. Antennae and cirri smooth. Fifteen pairs of oval to rounded elytra which cover the dorsum ; each is smooth apart from a small anterior patch of rounded tubercles. They may be missing from posterior elytra which are sticky with adherent sandgrains. Notosetae (fig. 1.4.p) sabre-like with a single row of 8–12 denticles on the distal third of the blade and an abruptly pointed end. Neurosetae (fig. 1.4.q) bidentate and more slender than the notosetae. The spinous rows are long and well marked in the superior series but become short and poorly marked inferiorly ; similarly the tip is truncate with two

subequal teeth superiorly but inferiorly the terminal tooth becomes more hooked and the secondary tooth much smaller. Animal commensal with *Linckia multiforis* (Asteroidea).

Type locality : Marquesas Is., S. Pacific.

Records : Mocambique (26/32/i).

Distribution : S. Pacific.

GASTROLEPIDIA Schmarda, 1861

Body elongate but not tapered and has more than 40 segments. Twenty-one or more pairs of elytra which cover the dorsum. Median antenna antero-dorsal in origin and the laterals subterminal. Prostomial peaks absent. A well marked facial tubercle and a small nuchal fold. Antennae and cirri club-shaped. Large scale-like ventral lamellae at the bases of the parapodia. Notosetae serrated. Neurosetae unidentate.

Types species : *Gastrolepida clavigera* Schmarda, 1861.

Gastrolepidia clavigera Schmarda, 1861
(fig. 1.5.a–f)

Gastrolepidia clavigera Schmarda, 1861 : 159, pl. 36 fig. 315 ; Seidler, 1924 : 142, figs. 19–20 ; Fauvel 1953 : 51, fig. 22 d–f.

Body up to 30 mm. long, purple when fresh but fading in alcohol to dark brown. Prostomium (fig. 1.5.a) bilobed but without frontal peaks. Anterior pair of eyes lateral and half-way back. Median antenna with a subterminal swelling half the size of the prostomium. Laterals slightly smaller. Occipital fold well marked. Antennae and cirri (fig. 1.5.d) smooth with a pear-shaped swelling preceding the filiform tip. Twenty-one pairs of elytra (fig. 1.5.b), each large, oval to reniform in shape with smooth margins and without tubercles or papillae but with white blister-like swellings near the posterior margin. A rounded ventral lamella (fig. 1.5.c) as broad as the segment is long at the base of each foot. Notopodia well developed. Notosetae (fig. 1.5.e) serrated to their blunt tips. Neuropodia large. Neurosetae (fig. 1.5.f) unidentate with slightly hooked tips. Animal commensal with *Holothuria atra*.

Type locality : Ceylon.

Records : Mocambique Is. (i).

Distribution : Tropical Indo-west-Pacific from Ceylon and Madagascar (i) to New Caledonia (i).

ACHOLOE Claparède, 1870

Body elongate with numerous segments and over 30 pairs of elytra which cover the dorsum. Median antenna terminal ; lateral antennae inserted subterminally. Cirrigerous segments with a bilobed dorsal process. Notosetae serrated. Neurosetae few, stout, hooked and spinulose.

Type species : *Nereis squamosa* Delle Chiaje, 1825.

Acholoe squamosa (Delle Chiaje, 1825)
(fig. 1.5. g–k)

Nereis squamosa Delle Chiaje, 1825 : 400.
Acholoe astericola Fauvel, 1923 : 94, fig. 36 d–h.

Body very long and fragile reaching 50 mm. with more than 100 segments. Prostomium (fig. 1.5.j) with frontal peaks and the lateral antennae inserted subterminally. Median antenna short and tapered. Antennae and cirri with a few small papillae. An occipital collar present. Up to 45 pairs of elytra which cover the dorsum. Each is oval in shape with a smooth margin and a surface which is glabrous apart from a small anterior patch of rounded tubercles. Dorsal cirri short. Cirrigerous segments (fig. 1.5.k) with T-shaped ciliated processes corresponding with the elytrophores. Notosetae (fig. 1.5.g) few, curved, weakly serrated and bluntly pointed. Neurosetae (fig. 1.5.h) stout and unidentate with a few weak spinous rows and a long curved and pointed apex. Animal commensal with asteroids.

Type locality : Naples.

Records : Not recorded from South Africa.

Distribution : English Channel (s) ; Mediterranean (s) ; Angola (s).

POLYEUNOA McIntosh, 1885

Body elongate and depressed with more than 50 segments and 18–28 pairs of elytra which cover the dorsum. They alternate fairly regularly with the dorsal cirri anteriorly but become irregular posteriorly. Anterior cirrigerous segments with dorsal tubercles corresponding with the elytrophores. Prostomium with the lateral antennae inserted ventrally and frontal peaks obvious. No nuchal fold. Notosetae not numerous and weakly serrated. Neurosetae with unidentate to bidentate blades.

Type species : *Polyeunoa laevis* McIntosh, 1885.

Key to Species

1 Neurosetae mainly bidentate with hooked tips (fig. 1.5.u). Notosetae serrated to their ends
P. nigropunctata

Neurosetae mainly unidentate with blade-like tips (fig. 1.5.q). Notosetae weakly serrated with long naked tips . . . . . ***P. laevsi***

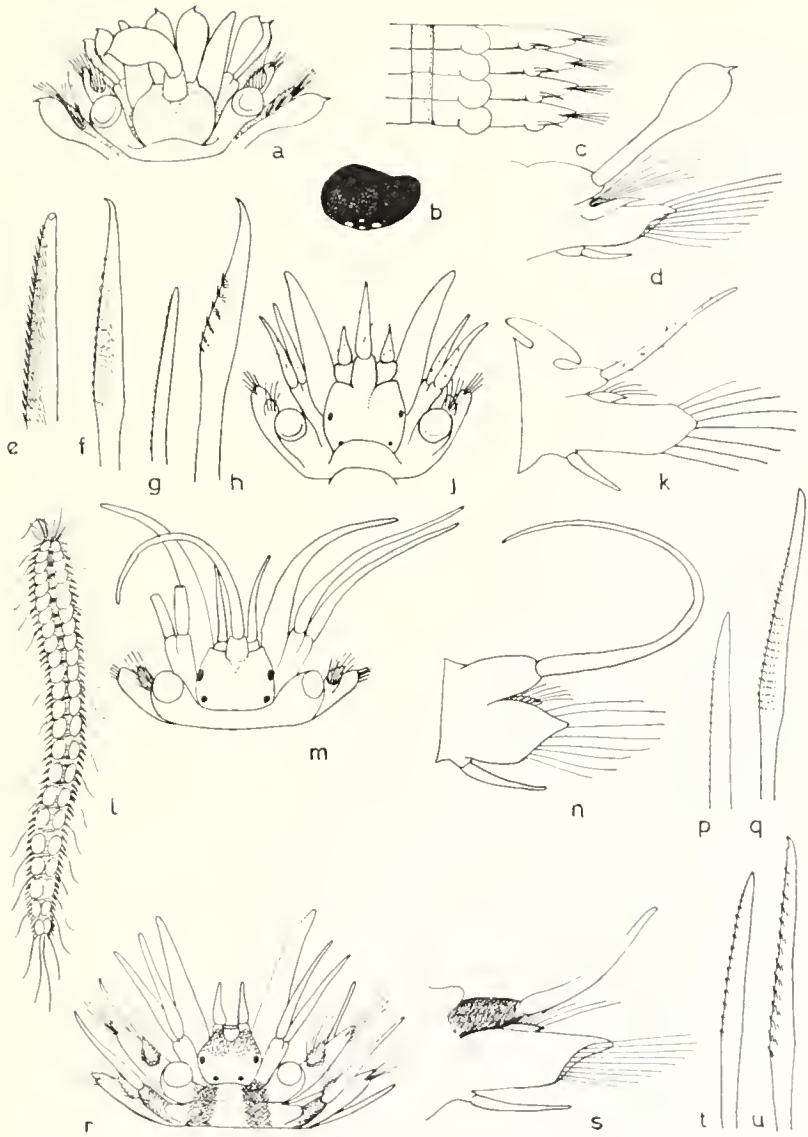

Fig. 1.5. *Gastrolepidia clavigera.* (A) Head. (B) Elytron. (C) Ventral lamellae. (D) Parapodium. (E) Notoseta. (F) Neuroseta. *Acholoe squamosa.* (G) Notoseta. (H) Neuroseta. (J) Head. (K) Parapodium with dorsal tubercle (after Fauvel). *Polyeunoa laevis.* (L) Entire animal (twice life size). (M) Head. (N) Parapodium. (P) Notoseta. (Q) Neuroseta. *Polyeunoa nigropunctata.* (R) Head. (S) Parapodium. (T) Notoseta. (U) Neuroseta.

Polyeunoa nigropunctata (Horst, 1915)
(fig. 1.5.r–u)

Polynoe nigro-punctata Horst, 1915 : 20, pl. 21, figs. 15–17.
Hololepidella nigropunctata : Day, 1957 : 65, fig. 1 a–f.

Body about 15 mm. long with 55 segments. It is slender and flattened with a pair of dark stripes running along the dorsum. Prostomium (fig. 1.5.r) grey anteriorly with large prostomial peaks. Anterior pair of eyes situated laterally. Lateral antennae short, smooth and ventral in origin. Median antenna unknown. Dorsal cirri (fig. 1.5.s) long and smooth with dark elytrophores. Twenty-five pairs of elytra each with an entire margin and a surface which is smooth apart from a small patch of minute rounded tubercles anteriorly. Notosetae (fig. 1.5.t) stout and weakly spinulose to their tips. Neurosetae (fig. 1.5.u) also weakly spinulose and either minutely bidentate or unidentate for the minute secondary tooth is often absent from inferior neurosetae.

Type locality : East Indies.

Records : Mocambique (26/32/i) – specimens rare.

Distribution : Indonesia.

Polyeunoa laevis McIntosh, 1885
(fig. 1.5.l–q)

Polyeunoa laevis McIntosh, 1885 : 76, pl. 12 fig. 2, pl. 20 fig. 8, pl. 7A figs. 12–13.
Enipio rhombigera Ehlers, 1908 : 47, pl. 4 figs. 1–12.

Body (fig. 1.5.l) elongate and flattened, up to 35 mm. long for 80 segments. Colour pale with reddish cross-bars at intervals. Prostomium (fig. 1.5.m) bilobed with obvious frontal peaks and the lateral antennae inserted ventrally. Median antenna about five times the prostomial length but laterals only twice the prostomial length. Anterior pair of eyes lateral and half-way back. Antennae and cirri long, slender and smooth. Notopodium small and pointed with only a few stout notosetae (fig. 1.5.p) which are weakly serrated and have long pointed tips. Neuropodium (fig. 1.5.n) large and pointed with numerous long neurosetae (fig. 1.5.q) which bear rows of small spinules and end in long blade-shaped tips which occasionally have a minute secondary tooth. About 20 pairs of deciduous elytra, each oval in shape with an entire margin and a glabrous surface.

Type locality : Prince Edward Is. in 567 metres.

Records : Cape (31/16/d to 34/23/s, d, vd).

Distribution : Antarctic and Subantarctic (s, d, vd).

POLYNOE Savigny, 1818

Body elongate and depressed with numerous segments. Lateral antennae inserted ventrally below the small prostomial peaks. Fifteen pairs of elytra restricted to the anterior half of the body, the posterior half bearing dorsal cirri and often fleshy tubercles in place of the elytrophores. Notosetae stout ; neurosetae unidentate or bidentate.

Type species: *Polynoe scolopendrina* Savigny, 1822 ('designated' Hartman, 1959: 98).

Key to Species

1 Elytra half dark and half pale. Tail segments without a median row of swellings (fig. 1.6.a) . . . . . ***P. erythrotaenia***

– Elytra speckled. Tail segments with a median and two lateral rows of swellings (fig. 1.6.g) ***P. scolopendrina***

Polynoe erythrotaenia (Schmarda, 1861)
(fig. 1.6.a–f)

Hemilepidia erythrotaenia Schmarda, 1861 : 150 pl. 37 fig. 318 ; Willey, 1904 : 258, pl. 13 figs. 6, 26.

Body (fig. 1.6.a) about 50 mm. long with numerous segments. Posterior naked segments with lateral rows of swellings but no median row. Prostomium (fig. 1.6.c) roughly square with poorly marked frontal peaks below which the anterior pair of eyes is partly hidden. Lateral antennae equal to the prostomial length ; median half as long. Antennae and cirri covered with small clavate papillae. Elytra (fig. 1.6.d) half dark and half pale with a few small chitinous tubercles near the anterior margin. Notosetae (fig. 1.6.e) few (4–8), stout, blunt and weakly serrated. Neurosetae (fig. 1.6.f) stout and unidentate with few rows of spinules.

Type locality : Cape of Good Hope.

Records : South West Africa (26/15/i) ; Cape (from 29/16/i to 34/18/i, s).

Distribution : Endemic.

Polynoe scolopendrina Savigny, 1822
(fig. 1.6.g–m)

Polynoe scolopendrina Savigny, 1822: 25; McIntosh, 1900: 389.

Body about 50 mm. long with numerous segments. Anterior half of the body covered with speckled elytra and the posterior half (fig. 1.6.g) naked, each segment having a median and two lateral swellings which are often pigmented. Prostomium (fig. 1.6.k) hexagonal with the large anterior pair of eyes well forward and often hidden by the small prostomial peaks. Median antenna twice the prostomial length, laterals rather shorter than the prostomium. Antennae and cirri with short papillae. Elytra (fig. 1.6.h) speckled and blotched, with a microscopic fringe along the external

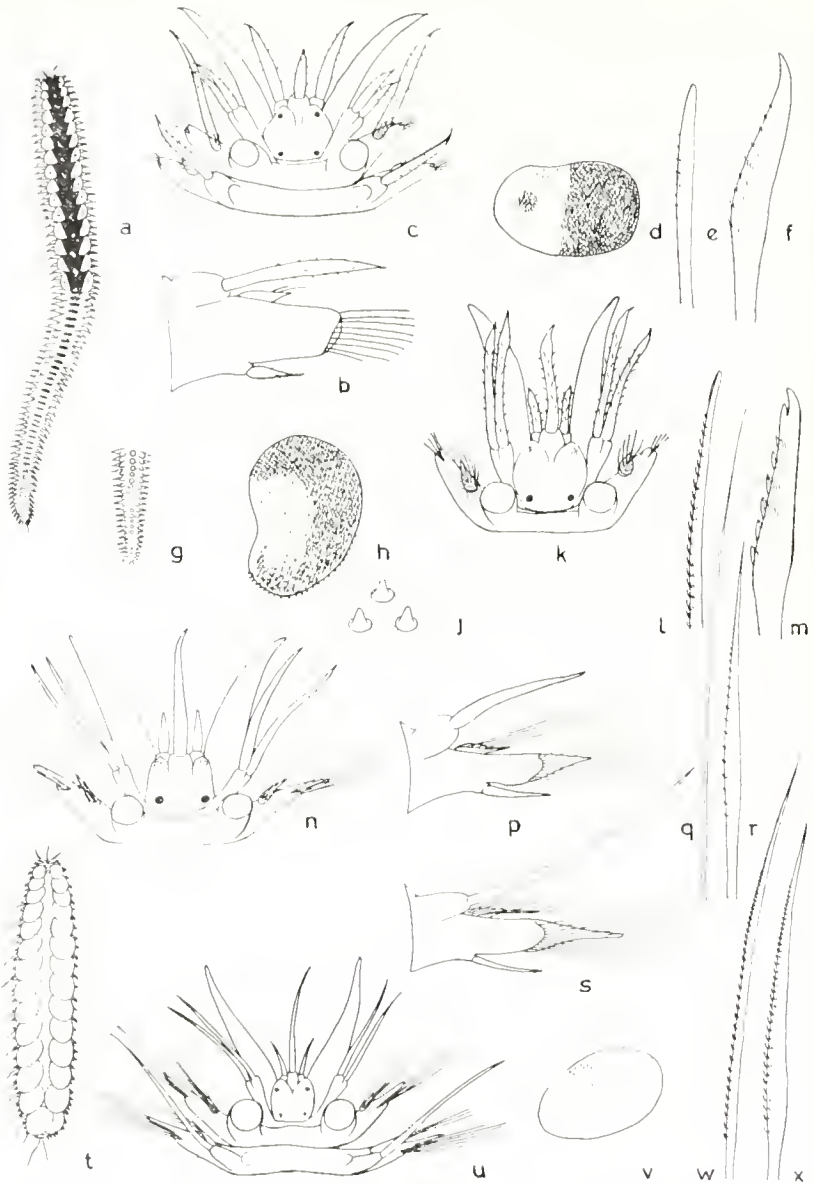

FIG. 1.6. *Polynoe erythrotaenia.* (A) Entire animal (1·5 times life size). (B) Parapodium. (C) Head. (D) Elytron. (E) Notoseta. (F) Neuroseta. *Polynoe scolopendrina.* (G) Posterior segments showing segmental tubercles. (H) Elytron. (J) Details of elytral tubercles. (K) Head. (L) Notoseta. (M) Neuroseta. *Antinoe epitoca.* (N) Head. (P) Parapodium. (Q) Notoseta. (R) Neuroseta. *Antinoe lactea.* (S) Parapodium. (T) Entire animal (life size). (U) Head. (V) Elytron. (W) Notoseta. (X) Neuroseta.

margin and conical chitinous tubercles (fig. 1.6.j) on the surface. Notosetae (fig. 1.6.l) numerous, serrated and tapered. Neurosetae (fig. 1.6.m) strongly bidentate, but in the posterior feet of the adult one or two superior neurosetae become enlarged and unidentate and may lose their spinules.

Type locality : Red Sea.

Records : Cape (from 32/18/i to 32/27/e, i, s) – fairly common.

Distribution : North Atlantic from Scotland to Senegal (i, s) ; Mediterranean (s) ; Red Sea.

ANTINOE Kinberg, 1855

Body depressed and oblong with 40–50 segments. Fifteen to sixteen pairs of elytra. Lateral antennae inserted ventrally and prostomial peaks present. Notosetae stout and serrated. Neurosetae long and fine with the ends tapered to hair-like tips. Neuropodium with a pointed presetal lobe.

Type species : *Antinoe microps* Kinberg, 1855.

Key to Species

1 Anterior pair of eyes under the prostomial peaks (fig. 1.6.n). Serrations on setae very faint ***A. epitoca***

– Anterior pair of eyes postero-dorsal to the prostomial peaks (fig. 1.6.u). Serrations on setae well marked . . . . . ***A. lactea***

Antinoe epitoca Monro, 1930
(fig. 1.6.n–r)

Antinoe epitoca Monro, 1930 : 67, fig. 19 a–f ; Day, 1963a : 389.

Body about 30 mm. long for 36 segments. Prostomium (fig. 1.6.n) bilobed with the large anterior pair of eyes immediately below the prostomial peaks and above the bases of the small lateral antennae. Median antenna twice the prostomial length ; laterals 3/4 the prostomium. Antennae and dorsal cirri smooth. Elytra large and oval with entire margins and smooth surfaces. Dorsal cirri arise from large cirrophores and the cirrostyles are long and tapered. Notosetae (fig. 1.6.q) numerous, long, fine and minutely serrated or possibly smooth in some cases. Neuropodium (fig. 1.6.p) with a pointed presetal lobe. Neurosetae (fig. 1.6.r) with numerous rows of small weak spinules and long tapering hair-like tips.

Type locality : Dredged off Angola.

Records : Cape (34/18/s).

Distribution : Angola (s).

Antinoe lactea Day, 1953
(fig. 1.6.s–x)

Antinoe lactea Day, 1953 : 403, fig. 2 a–g.

Body (fig. 1.6.t) broad and flattened, up to 40 mm. long for 36 segments. It is creamy white with crescentric brown marks on the large elytra. Prostomium (fig. 1.6.u) small with poorly developed peaks, small eyes and a slender median antenna twice the length of the prostomium. Anterior pair of eyes posterior to the prostomial peaks. Lateral antennae 3/4 the length of the prostomium. Palps short and stout. Dorsal cirri long and slender. Fifteen pairs of elytra entirely covering the dorsum, each (fig. 1.6.v) large, oval and smooth apart from a small patch of minute tubercles near the anterior margin. Notosetae (fig. 1.6.w) of varying length, the shorter ones fairly stout, the longer ones more slender and closely serrated to their fine tips. Neuropodium with a long pointed presetal lip. Neurosetae (fig. 1.6.x) markedly spinulose to their long fine hair-like tips.

Type locality : Langebaan Lagoon, South Africa.

Records : Cape (33/18/i, s and 34/18/i) – common on sheltered sandbanks.

Distribution : Endemic.

SCALISETOSUS McIntosh, 1885

Body short, flattened and fragile with 40–45 segments. Lateral antennae inserted ventrally but frontal peaks not developed. Fifteen pairs of elytra which cover most or all of the dorsum. All setae translucent with the basal serrations enlarged to form spinous pockets.

Type species : *Scalisetosus ceramensis* McIntosh, 1885.

Key to Species

1 Notosetae either smooth or with only two to three serrations (fig. 1.7.d). Neurosetae mainly unidentate with vestigial serrations beyond the spinous pocket . ***S. longicirrus***
– Notosetae with numerous coarse serrations (fig. 1.7.j). Neurosetae bidentate with well marked serrations . . . . . ***S. fragilis***

Scalisetosus longicirrus (Schmarda, 1861)
(fig. 1.7.a–f)

Polynoe (L.) longicirra Schmarda, 1861 : 152, pl. 36 fig. 309.
Scalisetosus longicirrus : Fauvel, 1953 : 50, fig. 22 a–e ; Day, 1962 : 631.

Body up to 15 mm. long with 45–50 segments. Anterior end (fig. 1.7.a) narrowed and the dorsum arched, often with two dark stripes. Prostomium brown, markedly bilobed but without frontal peaks. Anterior pair of eyes well back and lateral in position. Median antenna twice the prostomial length ; laterals shorter and ventral

in origin. Dorsal cirri very long, projecting twice as far as the neurosetae. Antennae and cirri smooth, slender and tapered to delicate tips. About 15 pairs of elytra covering most of the dorsum (12 posterior segments without elytra). Individual elytra (fig. 1.7.b) delicate with entire margins and smooth surfaces apart from a few small tubercles near the anterior margin ; colour mauve with clear specks. Notopodium (fig. 1.7.c) short and pointed ; neuropodium larger with a triangular presetal lobe and a shorter rounded postsetal lip. Notosetae (fig. 1.7.d) sabre-shaped with only three to four small serrations or entirely smooth to their stumpy bidentate tips. Neurosetae of two types : (a) a few superior slender setae (fig. 1.7.e) with faint serrations and bidentate tips ; (b) numerous inferior setae (fig. 1.7.f) with falcate unidentate tips and mere traces of serrations after the spinous pocket. Animal commensal with crinoids (*Tropiometra carinata* and *Lamprometra klinzingeri*).

Type locality : Ceylon.

Records : Mocambique (26/32/i) – a single specimen.

Distribution : Japan; tropical Indian Ocean (i) ; Red Sea.

Scalisetosus fragilis (Claparède, 1868)
(fig. 1.7.g–k)

Hermadion fragile Claparède, 1868 : 73, pl. 5 fig. 2.
Scalisetosus pellucidus (Ehlers) : Fauvel, 1923 : 74, fig. 27 a–f.

Body short, depressed, very fragile and about 15 mm. long. Prostomium (fig. 1.7.g) bilobed but frontal peaks rudimentary. Anterior pair of eyes large and well back on the sides of the prostomium. Median antenna three times the prostomial length but laterals only slightly longer than the prostomium. Dorsal cirri long, extending well beyond the neurosetae. Antennae and cirri with short papillae and a very long terminal filament. Elytra (fig. 1.7.h) oval, delicate and markedly deciduous ; when present they entirely cover the body. Elytron surface (h^1) largely beset with very minute, weakly chitinised pedunculate tubercles and sometimes a few large spherical vesicles as well. A minute marginal fringe. Notopodium (fig. 1.7.i) short and stout. Notosetae (fig. 1.7.j) stout with about 10 very coarse serrations, the basal ones being particularly enlarged ; tips of notosetae pointed and minutely flanged. Neuropodium long and pointed. Neurosetae (fig. 1.7.k) long, very transparent, with one large spinous pocket at the thickened base of the blade and others which decrease to coarse serrations distally ; tips of neurosetae each with a strong curved terminal tooth and a smaller secondary tooth.

Type locality : Naples.

Records : South West Africa (16/15/s and 28/16/s) ; Cape (from 32/17/i to 32/28/i, s) ; Natal (29/31/s) ; Madagascar (s).

Distribution : Atlantic from Scotland (s), North Carolina (s) and the English Channel (s) south to Madeira and Morocco (d) ; Mediterranean (s) ; Indian Ocean (Maldives (i) and Andamans (i)).

FIG. 1.7. *Scalisetosus longicirrus*. (A) Anterior end. (B) Elytron. (C) Posterior view of foot. (D) Notoseta. (E) Superior neuroseta. (F) Inferior neuroseta. *Scalisetosus fragilis*. (G) Head. (H) Elytron. (I) Posterior view of foot. (J) Notoseta. (K) Neuroseta. *Gattyana mossambica*. (L) Head. (M) Elytron. (N) Posterior view of foot. (O and O^1) Notoseta and details of tip. (P, P^1) Neuroseta. *Eunoe hubrechti*. (Q) Head. (R) Elytron and enlarged view of tubercle. (S) Foot. (T) Notoseta. (U) Neuroseta. (V) Pygidium and caudal appendage.

GATTYANA McIntosh, 1900

Body short with about 45 segments and 15 pairs of elytra which cover the dorsum. Prostomium with obvious frontal peaks and lateral antennae inserted ventrally. Notosetae very fine and spinulose. Neurosetae relatively stout and usually unidentate.

Type species : *Aphrodite cirrosa* Pallas, 1766.

Gattyana mossambica Day, 1962
(fig. 1.7.l–p)

Gattyana mossambica Day, 1962 : 629, fig. 1 a–e.

Body pale, up to 15 mm. long with 45 segments. Prostomium (fig. 1.7.l) with the first pair of eyes well forward and ventro-lateral to the prostomial peaks. Lateral antennae half as long as the prostomium ; median antenna twice the prostomial length. Dorsal cirri (fig. 1.7.n) short, flattened, not reaching the tips of the neurosetae. Antennae and cirri with tapered tips and minute papillae. Fifteen pairs of elytra covering most of the dorsum ; each (fig. 1.7.m) with a network of brown markings and a smooth margin. Anterior elytra covered with minute rounded tubercles but posterior ones with only a small patch of rounded tubercles near the anterior margin. Notosetae (fig. 1.7.o) much finer than the neurosetae ; they appear to be smooth but actually have a close-set series of minute serrations extending to their hairlike tips. Neurosetae (fig. 1.7.p) with about 15 rows of delicate spinules extending almost to the end of the blade. The two superior neurosetae are unidentate with tapered tips but the rest are bidentate. The nakes ends of the blades (p^1) are short and broad and appear to be split for the secondary tooth is almost as large as the apical one.

Type locality : Inhaca Island, Mocambique.

Records : Mocambique (26/32/i, 24/34/s).

EUNOE Malmgren, 1866

Body short with 35–45 segments and 15 pairs of elytra which cover all or most of the dorsum. Prostomial peaks present. Median antenna terminal and lateral antennae inserted ventrally. Notosetae markedly stouter than the neurosetae. Neurosetae mainly unidentate.

Type species : *Polynoe nodosa* Sars, 1861.

Key to Species

1	Elytron surface covered with conical tubercles	2
–	Elytron surface smooth apart from a small anterior patch of rounded tubercles	3
2	Appendages slender, smooth. Margins of elytra smooth. Bathypelagic with very long setae (fig. 1.7.q)	*E. hubrechti*
–	Appendages papillose. Margins of elytra minutely fringed. Benthonic	*E. nodulosa*
3	Eyes absent	*E. assimilis*
–	Eyes very large	*E. macrophthalma*

Eunoe hubrechti (McIntosh, 1900)
(fig. 1.7.q–v)

Evarne Hubrechti McIntosh, 1900 : 360, pl. 28 fig. 6, pl. 30 fig. 10, pl. 33 fig. 1, pl. 40, figs. 1–4.
Lagisca Hubrechti : Fauvel, 1923 : 78, fig. 29.

Body brown, and up to 25 mm. long. Adult with 46 segments but planktonic juveniles with less than 30. Posterior segments tapered and the last 9–10 are not covered with elytra. Prostomium (fig. 1.7.q) with frontal peaks; the first pair of eyes are large and about one third the way back. Median antenna very long and slender ; laterals shorter, only twice the prostomial length. Dorsal cirri (fig. 1.7.s) long and slender. All antennae and cirri quite smooth. Elytra (fig. 1.7.r) pale with smooth margins and the surface beset with numerous, minute conical tubercles. Notosetae (fig. 1.7.t) very long and stout and held stiffly erect. Each is crystalline with the serrations reduced to mere ridges which half encircle the blade but leave the long pointed tips naked. Neurosetae (fig. 1.7.u) slender and transparent with long blades bearing numerous rows of spinules preceding the very long naked tips. Tips usually unidentate but occasionally have a minute secondary tooth. Pygidium with a voluminous caudal appendage. Bathypelagic.

Type locality : Bathypelagic off Ireland.

Records : Benguella Current (33/15/p) – one specimen.

Distribution : Atlantic from Greenland to the Antarctic.

Eunoe nodulosa sp. nov.
(fig. 1.8.a–e)

Body broad and pale in alcohol, about 30 mm. long for 45 segments. Prostomium (fig. 1.8.a) without obvious frontal peaks. Eyes small, the anterior pair being almost half the way back. Palps short. Median antenna small (? regenerating). Dorsal cirri (fig. 1.8.c) slender, not as long as the neurosetae. Antennae and cirri papillose. Elytra (fig. 1.8.b) large, oval, pale and minutely fringed. Elytron surface covered with small conical tubercles and short papillae ; a few stouter tubercles near the posterior margin. Notosetae (fig. 1.8.d, d^1) very stout and weakly serrated with long blunt tips. Neurosetae (fig. 1.8.e, e^1) with very long blades bearing numerous rows of spinules preceding the long naked tips which are unidentate and faintly hooked ; no sign of a secondary tooth. Holotype: B. M. (N.H.) Reg. No. 1966.26.1.

Type locality : Saldanha Bay, South Africa.

Records : Cape (33/18/i) – one specimen.

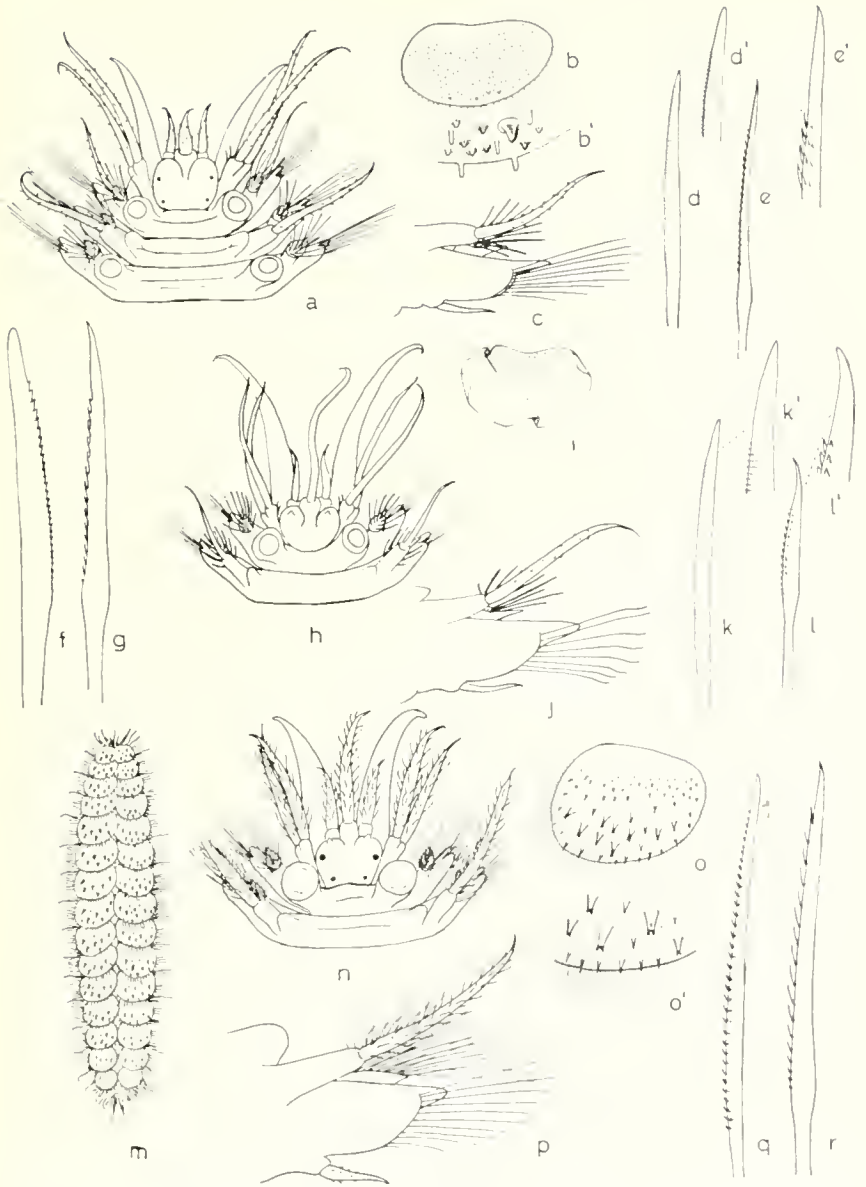

FIG. 1.8. *Eunoe nodulosa*. (A) Head. (B, B[1]) Elytron and details of margin. (C) Foot. (D) Notoseta. (E) Neuroseta. *Eunoe macrophthalma* (after McIntosh, 1925). (F) Notoseta. (G) Neuroseta. *Eunoe assimilis*. (H) Head. (I) Elytron. (J) Foot. (K) Notoseta. (L) Neuroseta. *Harmothoe dictyophora*. (M) Entire worm (twice life size). (N) Head. (O, O[1]) Elytron and details of tubercles. (P) Foot. (Q) Notoseta. (R) Neuroseta.

Eunoe assimilis McIntosh, 1925
(fig. 1.8.h–l)

Eunoe assimilis McIntosh, 1925 : 21, pl. 2 figs. 1–2, pl. 3 fig. 3 ; Day, 1963 : 359.

Body rather broad but tapered posteriorly, up to 30 mm. long for 30–70 segments. Prostomium (fig. 1.8.h) with small frontal peaks but without eyes. Palps long. Lateral antennae markedly ventral in origin, but 1·5 times the prostomial length. Median antenna antero-dorsal in origin with a stout ceratophore and a very slender ceratostyle more than three times the prostomial length. Antennae and cirri apparently smooth but actually clad with very short papillae. Elytra (fig. 1.8.i) large and delicate, mainly pale and smooth apart from a patch of small rounded tubercles near the anterior margin. Elytron margin smooth. Dorsal cirri (fig. 1.8.j) tapered and reach the ends of the neurosetae. Notosetae (fig. 1.8.k) few, very stout with close-set rows of very weak serrations and long, almost blade-like pointed ends. Neurosetae (fig. 1.8.l) few and unidentate, the short swollen blades bearing about 20 rows of short spinules preceding the long, slightly hooked tip. No trace of a secondary tooth.

Type locality : Dredged west of Cape Town.

Records : Cape (33 16 a and 34 16/a).

Distribution : Endemic.

Eunoe macrophthalma McIntosh, 1925
(fig. 1.8.f–g)

Eunoe macrophthalma McIntosh, 1925 : 22, pl. 2 figs. 5–6.

Body short and slightly tapered. Eyes very large and cover most of the prostomium. Lateral antennae short. Dorsal cirri very long and slender. Elytra diaphanous, smooth and entire with a patch of minute tubercles. Notosetae (fig. 1.8.f) stout with rows of small serrations. Neurosetae (fig. 1.8.g) unidentate with poorly marked spinules and long, almost straight tips without any sign of a secondary tooth.

Type locality : West of Cape Town in 2200 metres.

Records : Cape (33/16/a) – a single specimen.

HARMOTHOE Kinberg, 1855
(including *LAGISCA* Malmgren, 1865)

Body short and flattened with 35–45 segments and 15 pairs of elytra which cover most or all of the dorsum. Median antenna inserted terminally ; lateral antennae inserted ventrally. Prostomium with fronto-lateral peaks. Notosetae serrated and about as thick as the neurosetae. Neurosetae mainly bidentate.

Type species : *Harmothoe spinosa* Kinberg, 1855.

Key to Species

1 Elytra obviously fringed with elongate papillae. Antennae and dorsal cirri always papillose 2
– Elytra with smooth margins. Antennae and dorsal cirri papillose or smooth . . 7
2 Elytron-surface divided into polygonal areas (fig. 1.8.o). Tubercles elongate, some with two to five points . . . . . ***H. dictyophora*** (p. 65)
– Elytra without polygonal areas 3
3 First pair of eyes antero-ventral below the prostomial peaks (fig. 1.9.a). No large vesicles on the elytra 4
– First pair of eyes lateral and posterior to the prostomial peaks (fig. 1.9.n) . . . 6
4 Tubercles on the elytra long and thorn-like, sometimes ending in two or more points. Notosetae pointed 5
– Tubercles on the elytra short, cylindrical and truncate and ornamented to look like tall crowns (fig. 1.9.b[1]). Notosetae with blunt tips . . . . . ***H. antilopis*** (p. 66)
5 All tubercles ending in single points. (fig. 1.9.g[1]). Neurosetae strongly bidentate ***H. aequiseta*** (p. 66)
– The larger tubercles ending in two to four points (fig. 1.9.m). Neurosetae weakly bidentate . . . . . ***H. aequiseta africana*** (p. 68)
6 Neurosetae with a long slender secondary tooth. (Tubercles on the elytra capstan-shaped (fig. 1.10.b[1])) . . . . . ***H. gilchristi*** (p. 68)
– Neurosetae with a normal secondary tooth 7
7 Tubercles on the elytra small and bluntly conical (fig. 1.9.o[1]), a few like small crowns ***H. goreensis*** (p. 69)
– Tubercles on the elytra as curved thorns with four to five large ones near the posterior margin (fig. 1.10.g) . . . . . ***H. lagiscoides serrata*** (p. 69)
8 The fourth and subsequent elytra without tubercles posterior to the elytrophore . . 9
– All elytra with tubercles on the posterior half though these may be weakly chitinised . 10
9 Middle elytra small, not overlapping and completely glabrous . . . ***H. saldanha*** (p. 71)
– All elytra overlapping and with a patch of small rounded tubercles in front of the elytrophore but smooth posteriorly ; often with an oval ring of dark pigment (fig. 1.10.q) ***H. lunulata*** (p. 71)
– First pair of elytra heavily chitinised and covered with small tubercles ; the second and third with smaller patches but later ones with only a few soft papillae (fig. 1.11.b–c) ***H. corralophila*** (p. 72)
10 Tubercles on the elytra all uniformly small 11
— Tubercles on the elytra vary greatly in size 12
11 All elytra uniformly covered with small, well chitinised tubercles (fig. 1.11.h) ***H. waahli*** (p. 72)
— All elytra with an anterior patch of well chitinised tubercles but posterior tubercles small, weakly chitinised and blister-like (fig. 1. 11.r) . . . ***H. agulhana*** (p. 74)
12 Tubercles on the elytra grade from small, bluntly conical ones anteriorly to large ovoid one posteriorly (fig. 1.12.b) . . . . . ***H. profunda*** (p. 75)
— Tubercles of the elytra of two distinct types: an anterior patch of small tubercles and a posterior group of large mamilliform blisters (fig. 1.11.m) . ***H. fraserthomsoni*** (p. 74)

Harmothoe dictyophora (Grube, 1878)
(fig. 1.8.m–r)

Polynoe dictyophorus Grube, 1878 : 44, pl. 15 fig. 9.
Harmothoe dictyophora : Willey, 1905 : 251, pl. 1 figs. 14–16 ; Day, 1951 : 14 ; Fauvel, 1953 : 44, fig. 20 a, b, m.

Body (fig. 1.8.m) up to 25 mm. long for 36 segments and completely covered with 15 pairs of tough brown elytra. Prostomium (fig. 1.8.n) with well marked frontal

peaks. Anterior pair of eyes lateral. Lateral antennae just longer than the prostomium and the median twice as long. Antennae and cirri densely clad with long papillae. Elytra (fig. 1.8.o) large, tough, divided into polygonal areas and covered with conical chitinous tubercles of varying size, the largest ones in the form of spines with two to three points. Margin densely fringed with long papillae. Notosetae (fig. 1.8.q) very numerous, strongly serrated and end in long pointed tips. Neurosetae (fig. 1.8.r) strongly bidentate, with the secondary tooth far back.

Type locality: Phillipine Islands.

Records: Cape (32/28/i and 31/29/i); Natal (29/31/i) – rare.

Distribution: Tropical Indo-Pacific (i, s); Red Sea (i, s).

Harmothoe antilopis McIntosh, 1876
(fig. 1.9.a–e)

Harmothoe antilopis McIntosh, 1876: 383; Fauvel, 1923: 56, fig. 19 a–l; Day, 1963a: 386, fig. 1 a–f.

Length up to 25 mm. for 35 segments; flesh pink in alcohol with pale elytra. Prostomium (fig. 1.9.a) hexagonal with the large anterior pair of eyes immediately below the small prostomial peaks. Median antenna 1.4 times the prostomial length; laterals hardly more than half the prostomial length, markedly tapered and papillose. Dorsal cirri (fig. 1.9.c) about as long as the neurosetae and covered with slender papillae. Elytra (fig. 1.9.b) large, oval and fringed with slender papillae on the lateral margins; the surface also has a few soft papillae but is mainly covered with numerous cylindrical tubercles with four to five blunt projections giving the effect of tall crowns. A few tubercles near the posterior margin often capstan-shaped and ornamented with three saucer-like depressions with raised margins. Notosetae (fig. 1.9.d) stout with a close-set series of strong serrations extending almost to the faintly flanged tips. Neurosetae (fig. 1.9.e) with 15–20 rows of fine spinules and bidentate tips. The terminal tooth is broad, almost blade-shaped and the secondary tooth much shorter; inferiorly the neurosetae become unidentate.

Type locality: Deep dredging off Scotland.

Records: Cape (34/23/d).

Distribution: North Atlantic from Sweden (d) to Senegal (s); Mediterranean.

Harmothoe aequiseta aequiseta (Kinberg, 1855)
(fig. 1.9.f–k)

Antinoe aequiseta Kinberg, 1855: 385.
Parmensis capensis Willey, 1904: 258, pl. 13 figs. 7, 8, 27–29.
Harmothoe aequiseta: Augener, 1918: 137.

Body oblong, up to 25 mm. long for 38 segments. Colour yellowish brown with dark cirrophores. Prostomium (fig. 1.9.f) with frontal peaks below which are the anterior pair of eyes. Median antenna twice the prostomial length; laterals half as

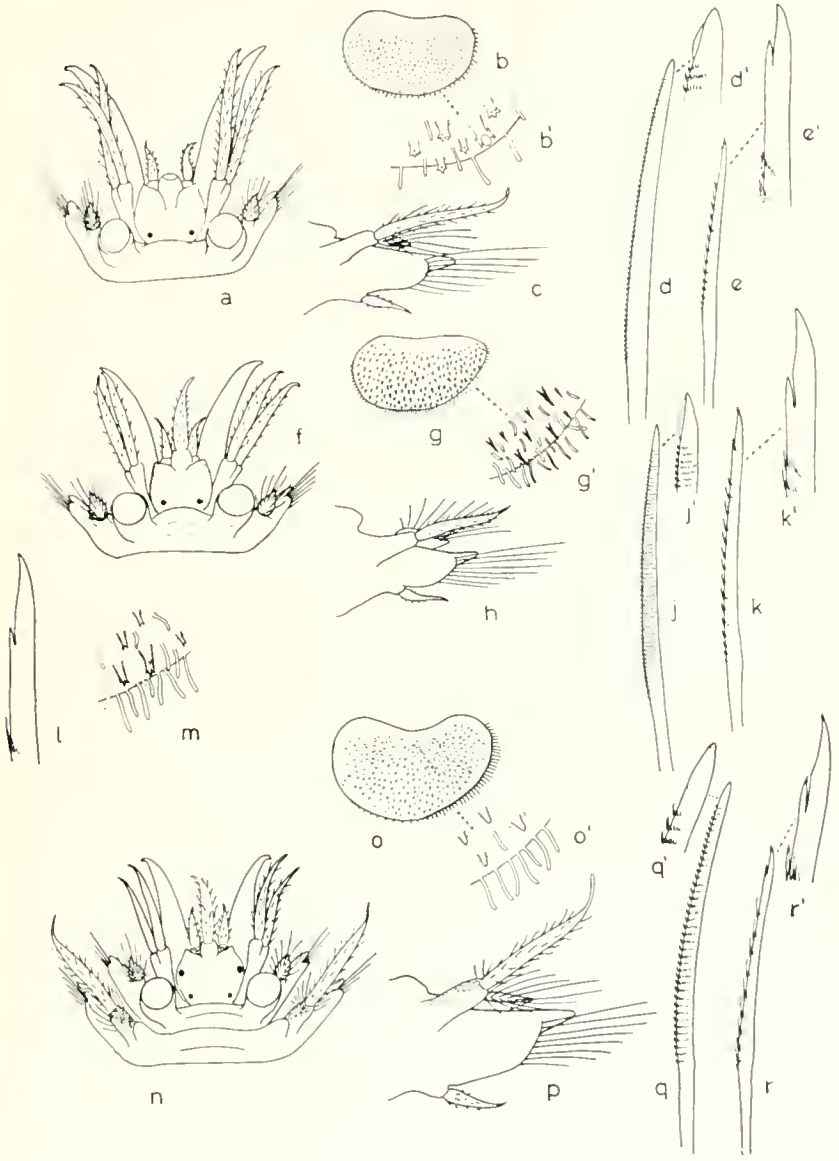

FIG. 1.9. *Harmothoe antilopis*. (A) Head. (B, B[1]) Elytron and details of tubercles. (C) Foot. (D, D[1]) Notoseta. (E, E[1]) Neuroseta. *Harmothoe aequiseta*. (F) Head. (G, G[1]) Elytron and details of tubercles. (H) Foot. (J, J[1]) Notoseta. (K, K[1]) Neuroseta. *Harmothoe aequiseta africana*. (L) Tip of neuroseta. (M) Details of tubercles on elytron. *Harmothoe gorcensis*. (N) Head. (O, O[1]) Elytron and details of tubercles. (P) Foot. (Q, Q[1]) Notoseta. (R, R[1]) Neuroseta.

long. Dorsal cirri (fig. 1.9.h) short. Antennae and cirri papillose. Elytra (fig. 1.9.g) deciduous, fringed and mottled brown, the surface being covered with thorn-like chitinous tubercles with dark centres. Notosetae (fig. 1.9.j) of varying length, stout, closely serrated, the ends being stout and pointed. Neurosetae (fig. 1.9.k) bidentate with rather long blades bearing 15 rows of spinules; secondary tooth far back from the apical one.

Type locality: Durban, South Africa.

Records: South West Africa (22/14/i); Cape (from 29/15/i to 31/23/e, s); Natal (29 31/i) – fairly common under stones.

Distribution: Endemic.

Harmothoe aequiseta africana (Augener, 1918)
(fig. 1.9.l–m)

Harmothoe africana Augener, 1918: 139, pl. 2 figs. 15–19; text-fig. 6.

The subspecies *H. a. africana* differs from the nominate form in having the larger tubercles on the elytra (fig. 1.9.m) ending in two to four points. Also the secondary tooth of the neurosetae (fig. 1.9.l) is small and often absent from the inferior setae.

Type locality: Ambrizette, Angola.

Records: Cape (34/18/s).

Distribution: Angola (i); Senegal (i, s).

Harmothoe gilchristi Day, 1960
(fig. 1.10.a–e)

Harmothoe gilchristi Day, 1960: 275, fig. 1 a–f.

Body oblong, up to 16 mm. long for 38 segments. Elytra extending to within six segments of the pygidium. Prostomium (fig. 1.10.a) with large frontal peaks; first pair of eyes lateral and half-way back. Lateral antennae three-quarters the prostomial length, median twice as long. Antennae and cirri (fig. 1.10.c) papillose and marked with two dark bands. Elytra (fig. 1.10.b) mottled brown, the surface being densely covered with truncate-cylindrical or capstan-shaped tubercles. Elytron with a small marginal fringe. Notosetae (fig. 1.10.d) numerous and strongly serrated to their blunt, grooved tips. Neurosetae (fig. 1.10.e) bidentate with fairly long blades bearing 15 rows of well developed spinules preceding the long naked tip. The terminal tooth is strong and the secondary tooth long and slender.

Type locality: Agulhas Bank, South Africa.

Records: Cape (34/18/s and 34/23/d) – several specimens.

Distribution: Endemic.

Harmothoe goreensis Augener, 1918
(fig. 1.9.n–r)

Harmothoe goreensis Augener, 1918: 142. pl. 2 figs. 4–6; pl. 3 fig. 42; text-fig. 7.

Body small, about 10 mm. long for 35–36 segments. Colour rusty brown with conspicuously dark cirrophores (see fig. 1.9.p). Prostomium (fig. 1.9.n) with sharp frontal peaks and the anterior pair of eyes lateral and almost half the way back. Median antenna twice the prostomial length and laterals one third the length of the median. Antennae and cirri papillose. Fifteen to sixteen pairs of elytra covering the dorsum. Elytra (fig. 1.9.o) oval and brown apart from a central dark spot or ring; margins fringed with papillae. Elytron surface covered with a few soft papillae and numerous short, bluntly conical tubercles. Notosetae (fig. 1.9.q) stout and strongly serrated with flanged and pointed ends. Neurosetae (fig. 1.9.r) strongly bidentate, each with a broad terminal tooth and a straight secondary tooth half its length. Inferior setae with the secondary tooth weak or absent.

Type locality: Goré, Senegal.

Records: South West Africa (26/15/i, s); Cape (from 32/18/s to 28/32/s); Natal (30/30/s); Mocambique (26/32/i, 24/34/s) – common in dredgings.

Distribution: Senegal (s); Angola (s).

Harmothoe lagiscoides serrata Day, 1963
(fig. 1.10.f–j)

Harmothoe lagiscoides serrata Day, 1963a: 388, fig. 1 g–m.

Body pale brown, tapered posteriorly and about 20 mm. long. Prostomium (fig. 1.10.f) with well marked frontal peaks. First pair of eyes lateral and half-way back. Lateral antennae obviously ventral in origin, two thirds of the prostomial length, tapered and papillose. Median antenna unknown. Dorsal cirri (fig. 1.10.h) long, exceeding the tips of the neurosetae and covered with long papillae. Ventral cirri very small. Elytra (fig. 1.10.g) large, delicate and mottled brown. A few long slender papillae on the surface and numerous ones fringing the postero-lateral margins. Tubercles on the elytra are sharp curved thorns of uniform size except for a row of large ones on the posterior margin. Notosetae (fig. 1.10.i) strongly serrated with pointed tips. Neurosetae (fig. 1.10.j) with 20 or more well developed spinules, long, naked, blade-like ends and bidentate tips.

Type locality: Dredged off Saldanha Bay, South Africa.

Records: Cape (33/17/d) – a single record.

FIG. 1.10. *Harmothoe gilchristi.* (A) Head. (B, B[1]) Elytron and details of tubercles. (C) Foot. (D) Notoseta. (E) Neuroseta. *Harmothoe lagiscoides serrata.* (F) Head. (G, G[1]) Elytron and details of tubercles. (H) Foot. (I) Notoseta. (J) Neuroseta. *Harmothoe saldanha.* (K) Head. (L) Elytron. (M) Foot. (N) Notoseta. (O) Neuroseta. *Harmothoe lunulata.* (P) head. (Q) Elytron. (R) Foot. (S) Notoseta. (T) Neuroseta.

Harmothoe saldanha Day, 1953
(fig. 1.10.k–o)

Harmothoe saldanha Day, 1953: 401, fig. 1 a–d.

Body oblong, about 25 mm. long for 39 segments. Colour pale with a brown arc on the elytra which do not touch one another after the first three and leave most of the back uncovered. Prostomium (fig. 1.10.k) with blunt frontal peaks and the first pair of eyes well back. Median antenna large but laterals short. Dorsal cirri (fig. 1.10.m) shorter than the neuropodia. Antenna and cirri sparsely beset with a few lumpy papillae. Elytra (fig. 1.10.l) oval, longer than broad. Surface smooth and without any sign of a fringe. In the middle of the body they are too small to touch one another and most of the back is naked. Nephridial papillae well developed and have swollen bases. Notosetae (fig. 1.10.n) 10–12 in number, short, weakly serrated and with long blunt tips. Neurosetae (fig. 1.10.o) strongly bidentate with the secondary tooth almost as long as the terminal one. In middle and posterior segments the superior neuroseta is stouter and darker than the rest, lacks spinules and becomes unidentate.

Type locality: Langebaan Lagoon, South Africa.

Records: Cape (33/17/s, 33/18/i, 33/26/s).

Distribution: Endemic.

Harmothoe lunulata (Delle Chiaje, 1841)
(fig. 1.10.p–t)

Polynoe lunulata Delle Chiaje, 1841 [in] Claparède 1868: 373.
Harmothoe lunulata Fauvel, 1923: 70, fig. 36.

Body up to 35 mm. long for 39 segments. It is rather broad and completely covered with 15 pairs of large glabrous elytra. Prostomium (fig. 1.10.p) brownish with small frontal peaks and well separated eyes, the first pair being antero-lateral. Lateral antennae short and strongly tapered. Dorsal cirri (fig. 1.10.r) short and banded near the tip. Antennae and cirri sparsely beset with small clavate papillae. Elytra (fig. 1.10.q) large, oval, longer than broad, surface glabrous and entire with only a few minute tubercles near the anterior margin. The elytra are pale, usually with a central spot and an incomplete crescentric ring of brown pigment. Notosetae (fig. 1.10.s) short and serrated to their blunt tips. Neurosetae (fig. 1.10.t) fine with short blades and strongly bidentate tips, the secondary tooth being long and in line with the shaft. Animal commonly commensal with tubicolous polychaetes.

Type locality: Naples.

Records: South West Africa (26/15/s); Cape (34/18/s to 32/28/s); Natal (29/31/s); Mocambique (23/35/e).

Distribution: Atlantic coasts of Europe from the North Sea (i, s, d) to the Mediterranean (s); western Canada to southern California; S. Arabia (s).

Harmothoe corralophila Day, 1960
(fig. 1.11.a–f)

Harmothoe corralophila Day, 1960: 278, fig. 2 a–f.

Body rather broad and pale, up to 15 mm. long for 37 segments. Dorsum completely covered by elytra. Prostomium (fig. 1.11.a) with distinct frontal peaks. First pair of eyes lateral and half-way back. Median antenna three times the prostomial length but laterals much shorter. Dorsal cirri (fig. 1.11.d) long. Antennae and cirri smooth. First pair of elytra (fig. 1.11.b) small, rounded, strongly chitinised and covered with conical tubercles except for a marginal belt; next two pairs with smaller patches of similar tubercles; subsequent elytra (fig. 1.11.c) longer than broad, without tubercles and quite smooth apart from a few soft papillae. Margins smooth throughout. Notosetae (fig. 1.11.e) few and stout with strong, widely spaced serrations preceding the long tip. Neurosetae (fig. 1.11.f) numerous, long and glassy with 20 rows of poorly marked spinules; the tip is bidentate with a strong terminal tooth and a variable secondary one – superior setae (fig. 1.11.f[1]) have two almost equal teeth giving a bifid appearance but the inferior setae (fig. 1.11.f[2]) have a small secondary tooth with a filiform tip. Animal commensal in tube-shaped galls on Stylasterid corals.

Type locality: Agulhas Bank, South Africa.

Records: Cape (33/17/s to 35/23/d).

Distribution: Endemic.

Harmothoe (*Lagisca*) *waahli* (Kinberg, 1855)
(fig. 1.11.g–k)

Antinoe Waahli Kinberg, 1855: 385.
Harmothoe Waahli: Monro, 1933: 489, figs. 1–3.

Body up to 30 mm. long for 47 segments. Posterior end tapered in the adult and the last 10–12 segments not covered by elytra. Prostomium (fig. 1.11.g) with small frontal peaks and the first pair of eyes well forward and ventro-lateral. Parapodia (fig. 1.11.i) short and stout. Antennae and dorsal cirri short, somewhat swollen subterminally and beset with very small papillae. Elytra (fig. 1.11.h) pale, tough and densely covered with small ovoid tubercles. Margins smooth. Notosetae (fig. 1.11.j) stout with strong, close-set serrations and blunt, faintly grooved ends. Neurosetae (fig. 1.11.k) mainly bidentate with a stout secondary tooth half the length of the terminal one.

Type locality: Port Jackson, Australia.

Records: S.W. Africa (26/15/i); Cape (from 30/17/i to 33/25/s).

Distribution: Tahiti (i); Malaya; W. Australia (i).

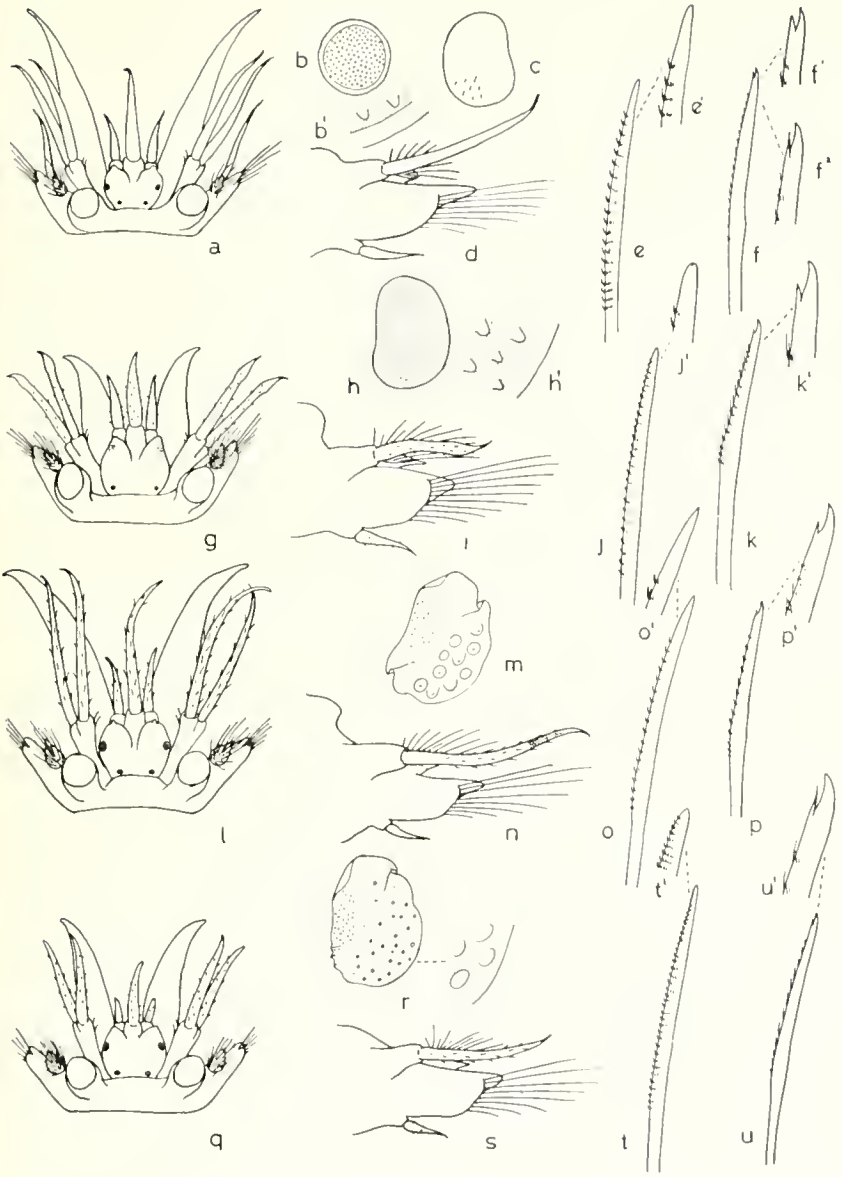

FIG. 1.11. *Harmothoe corralophila.* (A) Head. (B) First elytron. (C) Fifth elytron. (D) Foot. (E) Notoseta. (F) Neuroseta. *Harmothoe waahli.* (G) Head. (H) Elytron. (I) Foot. (J) Notoseta. (K) Neuroseta. *Harmothoe fraserthomsoni.* (L) Head. (M) Elytron. (N) Foot. (O) Notoseta. (P) Neuroseta. *Harmothoe agulhana.* (Q) Head. (R) Elytron. (S) Foot. (T) Notoseta. (U) Neuroseta.

Harmothoe fraserthomsoni McIntosh, 1897
(fig. 1.11.l–p)

Harmothoe Fraser-Thomsoni McIntosh, 1897 : 337, pl. 28 fig. 7, pl. 29 fig. 15, pl. 32 fig. 11, pl. 39 figs. 4–5 ; Fauvel, 1923 : 68, fig. 25 a–e.

Body pale and relatively broad, up to 20 mm. long for 39–40 segments. Prostomium (fig. 1.11.l) with well marked frontral peaks and the first pair of eyes well back. Palps large. Median antenna slender, twice the prostomial length, laterals equal to prostomium. Dorsal cirri (fig. 1.11.n) long with a subterminal brown band. Antennae and cirri beset with a few small papillae. Fifteen pairs of elytra which completely cover the dorsum. Elytra (fig. 1.11.m) large and delicate with a smooth margin and the surface beset with a few small tubercles anteriorly and large blister-like swellings with a central nipple postero-laterally. Notosetae numerous, closely serrated and end in short blunt tips.* Neurosetae (fig. 1.11.p) strongly bidentate but the secondary tooth is much smaller than the terminal one and diverges outwards.

Type locality : South-west Ireland.

Records : Cape (from 29/16/i to 33/26/i, s).

Distribution : Ireland (s) ; Plymouth (s) ; Cape Verde Is. (i, s) ; Mediterranean (s).

*South African specimens have notosetae with well spaced serrations and long naked tips (see fig. 1.11.o).

Harmothoe agulhana Day, 1960
(fig. 1.11.q–u)

Harmothoe agulhana Day, 1960 : 277, fig. 1 g–l.

Body up to 12 mm. long for 36 segments. Colour pale with speckled elytra which cover the dorsum. Prostomium (fig. 1.11.q) with small frontal peaks and the first pair of eyes situated laterally. Lateral antennae short and stumpy ; median tapered and equal to the length of the prostomium. Tentacular cirri slender. Antennae and cirri sparsely beset with clavate papillae. Elytra (fig. 1.11.r) large, thin, speckled and reniform in shape, the surface having a patch of small chitinous tubercles anteromedially and a scattering of small, weakly chitinised and blister-like tubercles elsewhere. Margins smooth. Notosetae (fig. 1.11.t) densely serrated right to their blunt tips. Neurosetae (fig. 1.11.u) with a strong terminal tooth and a slender secondary one three quarters the length of the terminal.

Type locality : Algoa Bay, South Africa.

Records : Cape (34/18/s to 33/25/s).

Distribution : Endemic.

Harmothoe profunda Day, 1963
(fig. 1.12.a–e)

Harmothoe profunda Day, 1963: 357, fig. 1 a–e.

Body 15–20 mm. long for 35 segments. The dorsum is dark and the elytra and parapodia pale. Prostomium (fig. 1.12.a) with distinct frontal peaks and large eyes, the first pair being well back and to the sides. Median antenna unknown; laterals small, about half the length of the prostomium. Dorsal cirri extend to the tips of the neurosetae. Antennae and cirri sparsely clad with long papillae. Fifteen pairs of elytra which cover the dorsum; individual elytra (fig. 1.12.b) rounded to oval and densely covered with tubercles which increase gradually in size from small bluntly conical ones anteriorly to large, almost spherical ones near the posterior margin. The largest are smooth but others are rugose or have small blunt projections. Elytron margin with a few small papillae. Notopodium (fig. 1.12.c) well developed with notosetae much stouter than the neurosetae; individual notosetae (fig. 1.12.d) strongly serrated and the tip blunt and flanged. Neurosetae (fig. 1.12.e) with long blades bearing 15–20 rows of spinules and ending in bidentate tips with a strong terminal tooth and a straight secondary tooth half the length of the terminal one.

Type locality: 2000 metres west of Cape Town.

Records: Cape (33/16/a and 34/16/a).

Distribution: No other records.

DRIESCHIA Michaelsen, 1892

Body short with 28–32 segments and 13 pairs of elytra which cover the dorsum. Median and lateral antennae all inserted terminally at the same level. Dorsal cirri long with sausage-like cirrophores. Notopodia rudimentary, notosetae absent. Neurosetae include a superior group with long, slender, almost smooth blades and an inferior group of stouter setae with tapered spinulose blades ending in unidentate tips. Animal planktonic and probably a larval stage of *Lepidasthenia*.

Type species: *Drieschia pelagica* Michaelsen, 1892.

Drieschia pelagica Michaelsen, 1892
(fig. 1.12.f–i)

Drieschia pelagica Michaelsen, 1892: 6; Seidler, 1923: 173; Fauvel, 1953: 54, fig. 24.

Body translucent; five to eight mm. long for 30 segments. Prostomium (fig. 1.12.f) swollen posteriorly and the first pair of eyes well back. Median antenna slender and over twice the prostomial length; laterals shorter. Dorsal cirri (fig. 1.12.g) with very long swollen cirrophores and slender cirrostyles. Elytrophores stout; elytra deciduous, delicate and quite smooth. Notopodium represented by a small papilla

FIG. 1.12. *Harmothoe profunda*. (A) Head. (B) Elytron. (C) Foot. (D) Notoseta. (E) Neuroseta. *Drieschia pelagica*. (F) Head. (G) Foot. (H) Inferior neuroseta. (I) Superior neuroseta.

enclosing the aciculum but no notosetae. Neuropodium with equal presetal and postsetal lips. Superior neurosetae (fig. 1.12.i) very slender and bear microscopic serrations. Inferior neurosetae (fig. 1.12.h) shorter and stouter with tapered unidentate blades bearing five to six weak spinous rows.

TYPE LOCALITY: Ceylon.

RECORDS: Natal (31/29/p).

DISTRIBUTION: Indo-west-Pacific (planktonic).

EUPHIONE McIntosh, 1885

Generally similar to *Lepidonotus* with 26–27 setigers and 12 pairs of elytra which cover the dorsum. Median and lateral antennae terminal in origin. Cirrigerous segments with flattened transverse elytrophores (paraelytrophores). Elytrophores, paraelytrophores and cirrophores with a few small branchial papillae. Notosetae numerous, very long and silky with minute spinules. Neurosetae stout and unidentate with long fine spinules giving a bearded effect.

TYPE SPECIES: *Euphione elisabethae* McIntosh, 1885.

Euphione elisabethae McIntosh, 1885
(fig. 1.13.a–f)

Euphione elisabethae McIntosh, 1885: 62, pl. 9 fig. 3, pl. 17 fig. 7, pl. 18 fig. 10, pl. 8A figs. 3–6.

Body (fig. 1.13.a) broad, oval in outline. Length up to 46 mm. for 26 segments. Prostomium (fig. 1.13.b) with both pairs of eyes large, posterior and close together. Antennae long with small subterminal swellings. A prominent nuchal fold. Twelve pairs of large tough reniform elytra each with a short fringe of papillae on the lateral and posterior margins. Elytron surface (fig. 1.13.c) with large pedunculate tubercles often expanded to form daisy-like structures. Cirrigerous segments (fig. 1.13.d) with paraelytrophores. Nephridial papillae well developed. Segments 3–20 with about three small branchial papillae. Notosetae (fig. 1.13.e) numerous with long, fine, silky blades completely ringed with minute spinules. Neurosetae (fig. 1.13.f) stout and unidentate with long fine spinules giving the blade a bearded appearance.

Type locality: 275 metres off the Cape of Good Hope.

Records: Cape (from 31/16/d and 34/17/vd to 35/23/vd).

Distribution: Endemic.

HERMENIA Grube, 1857

Body oblong with 27 segments and 12 pairs of elytra provided with very large tubercles. The elytra do not overlap on middle and posterior segments so that the dorsum is partly exposed and develops warts or tubercles. Median and lateral antennae all inserted terminally at the same level. Notosetae poorly developed or absent. Neurosetae with the spinous blade reduced to a pair of spines at the base of the long unidentate terminal tooth.

Type species: *Hermenia verruculosa* Grube, 1857.

Key to species

1	Notosetae absent	**H. verruculosa***
–	Notosetae present	**H. acantholepis**

Hermenia acantholepis (Grube, 1875)

Polynoe acantholepis Grube, 1875: 61.
Hermenia acantholepis: Seidler, 1924: 94: Fauvel, 1932: 16.

Body up to 30 mm. long, with chestnut brown elytra. Prostomium with the anterior pair of eyes lateral. Median antenna 1·5 times as long as the prostomium, laterals equal to prostomium. Palps relatively short,, facial tubercle well developed. Antennae, tentacles and dorsal cirri banded distally and with a subterminal swelling and a slender tip. Dorsum warty where exposed between the elytra and parapodia and ventrum with minute papillae. Elytra relatively small so that only the first two or three pairs overlap and the rest are separated. Individual elytra subcircular with

FIG. 1.13. *Euphione elisabethae*. (A) Entire animal (half natural size). (B) Head. (C) Elytron. (D) Posterior view of foot. (E) Notoseta. (F) Neuroseta. *Lepidonotus* (*Thormora*) *jukesi*. (G) Entire animal (twice natural size). (H) Head. (I) Elytron. (J) Anterior view of foot. (K) Notoseta from central group. (L) Notoseta from outer palisade. (M) Neuroseta. *Lepidonotus carinulatus*. (N) Head. (O) Elytron. (P) Foot (posterior view). (Q) Notoseta. (R) Neuroseta.

a fringe of small papillae on the external margin and the surface beset with very large tubercles; those near the centre are flattened while those near the margin are ovoid and radiate out beyond the edge of the elytron. Notosetae few and weak with minute serrations extending to the tapered tip. Neurosetae uniformly stout with the spinous blade reduced to faint transverse striations preceding a pair of stout spines at the base of the long terminal tooth. There is no sign of a secondary tooth.

Type locality: Philippine Islands.

Records: Madagascar (s).

Distribution: Tropical Indo-west-Pacific from the Philippine Islands (i) and Samoa to Ceylon (s) and Madagascar.

LEPIDONOTUS Leach, 1816
(including *THORMORA* Baird, 1865)

Body short and oblong with 26–27 segments and 12 pairs of elytra covering the dorsum. Posterior elytra not markedly reduced in size. Median and lateral antennae all inserted terminally at the same level. Notosetae well developed, the outer ones short and always serrated, the central ones longer and in the subgenus *Thormora* they have smooth blades. Neurosetae with short spinous blades and hooked, unidentate or bidentate tips.

Type species: *Aphrodita clava* Montagu, 1808.

Key to Species

1 Central notosetae with long smooth blades (fig. 1.13.k–l) (subgenus *Thormora*). Elytra with smooth margins and small conical tubercles . . . . . ***L.* (*T.*) *jukesi*** (p. 80)
– Central notosetae serrated like the rest (subgenus *Lepidonotus*) 2
2 Elytra with fringed margins 3
– Elytra with smooth margins 6
3 Neurosetae strongly bidentate 4
– Neurosetae weakly bidentate or unidentate 5
4 Large central tubercles on the elytra covered with spinules. Antennae with a marked subterminal swelling and a dark band . . . . . ***L. jacksoni*** (p. 80)
– Large central tubercles on the elytra either smooth or with a few large thorns (fig. 1.13.o). Antennae without an obvious subterminal swelling . . . ***L. carinulatus*** (p. 81)
5 Tubercles on the elytra large and swollen, the outer ones arising from polygonal areas ***L. magnatuberculatus*** (p. 81)
– Tubercles on the elytra small, rounded to conical (fig. 1.14.b). Polygonal areas absent ***L. tenuisetosus*** (p. 82)
6 Anterior elytra without keels or enlarged crests. 7
– Anterior elytra with tumid, bilobed crests (fig. 1.14.g). Dorsal cirri cylindrical ***L. cristatus*** (p. 82)
– Anterior elytra with narrow keeled ridges extending back from the elytrophore (fig. 1.14.j). Dorsal cirri flattened . . . . . ***L. glaucus*** (p. 84)

7 Elytra with large tubercles 8
– Elytra with a scattering of minute ovoid tubercles (fig. 1.14.n). (Colour purple with a white spot) . . . . . ***L. purpureus*** (p. 84)
8 Anterior elytra with capstan-shaped tubercles . . . . . ***L. clava****
– Anterior elytra with long cylindrical tubercles (fig. 1.14.r) . . ***L. semitectus*** (p. 85)
– Anterior elytra with large spherical tubercles (fig. 1.14.r) . . ***L. durbanensis*** (p. 85)

Lepidonotus* (*Thormora*) *jukesi (Baird, 1865)
(fig. 1.13.g–m)

Thormora jukesii Baird, 1865: 199.
Lepidonotus (*Thormora*) *jukesii*: Seidler, 1924: 88; Fauvel, 1953: 37, fig. 13 o–r.

Body (fig. 1.13.g) oblong, and up to 25 mm. long. Anterior part of prostomium grey (see fig. 1.13.h). First pair of eyes well back, second pair small and often hidden by a nuchal fold. Lateral antennae equal to the prostomial length; median longer about 1·5 times the prostomium. Antennae, tentacular cirri and dorsal cirri smooth, each with a subterminal swelling marked by dark pigment. Body pale with dark pigment in the middle of the back between the elytra. Elytra (fig. 1.13.i) tough, not fringed, mainly dark grey with small conical tubercles best developed in a central group and a row around the edges. All tubercles larger on anterior elytra. Notosetae (fig. 1.13.k–l) include an outer palisade or short curved forms with small, close-set serrations extending to their blunt tips, an inner palisade of long, smooth setae with hastate tips and in the centre even longer tuft of very fine setae essentially similar to the inner palisade. Neurosetae (fig. 1.13.m) much stouter, their blades having only 8–12 rows of spinules and long, naked, unidentate tips.

Type locality: Philippine Is.

Records: Mocambique Is. (i); Madagascar (i).

Distribution: Indo-west-Pacific from the Red Sea (i) to the Philippine Is. (i, s); New Zealand (i); Japan.

Lepidonotus jacksoni Kinberg, 1858

Lepidonotus jacksoni Kinberg, 1858: 11, pl. 3 fig. 11, pl. 8 fig. 48: Seidler, 1924: 74: Fauvel, 1953: 34, fig. 13 k–m: Day, 1962: 631.

Body about 20–25 mm. long, colour brown with a white splash on the elytra. Prostomium with the larger anterior pair of eyes lateral. Median antenna twice as long as the prostomium, laterals shorter. Palps and tentacular cirri longer than the antennae. Antennae and dorsal cirri with a dark band and a subterminal swelling. Elytra oval to reniform and entirely covering the body. Each has the external margin fringed with long papillae and the surface covered with rounded tubercles which are larger in the swollen centre of the eltyron. The smaller ones are often crown-like with spines and some are carinate but the larger ones are echinulate

being covered with small spinules. Notosetae are closely beset with serrations to their tapered tips. Neurosetae have short serrated blades and are bidentate with a small secondary tooth below the terminal one.

Type locality: Port Jackson, South Australia.

Records: Madagascar, Nossi Be (s).

Distribution: Warm Indo-west-Pacific from New Zealand and Australia to India (s) and tropical East Africa (i)

Lepidonotus carinulatus (Grube, 1870)
(fig. 1.13.n–r)

Polynoe (*Lepidonotus*) *carinulata* Grube, 1870 : 488.
Lepidonotus carinulatus : Grube, 1878 : 26, pl. 3 fig. 2 ; Augener, 1922 : 8 ; Fauvel, 1953 : 34, fig. 13 g–i.

Body greyish brown and about 15–30 mm. long. Prostomium (fig. 1.13.n) with the first pair of eyes lateral and well back, the second pair partly concealed by an occipital fold. Antennae and dorsal cirri without obvious subterminal swellings or dark bands. Elytra(fig. 1.13.o) oval to reniform and fringed on the posterior and lateral margins. Elytron surface with spherical tubercles varying in size, the larger ones towards the posterior margin being either smooth or with a few minute spines, the smaller ones near the lateral margin crown-like and strongly spinose. Notosetae (fig. 1.13.q) small, slender and serrated to their tapered tips. Neurosetae (fig. 1.13 r) weakly bidentate.

Type locality: Red Sea.

Records: Madagascar (i) – one specimen.

Distribution: Red Sea and Indo-west-Pacific (1, s).

Lepidonotus magnatuberculatus Seidler, 1923

Lepidonotus magnatuberculata Seidler, 1923: 254, fig. 1.

Prostomium as broad as long. Both pairs of eyes on the sides of the prostomium and well back. Antennae not known. A nuchal fold present. Elytra reniform, leathery and partly divided into polygonal areas bearing large swollen tubercles with apical points. Anterior and inner parts of elytra with smaller tubercles and the postero-lateral margin fringed with long papillae. Dorsal cirri short, each with a subterminal swelling. Notopodium small; notosetae fine and spinulose to their tapered tips. Neuropodium conical; neurosetae unidentate and slender with 9–11 spinous rows, but the inferior neurosetae of posterior feet are stouter with shorter spinous blades.

Type locality: ? Port Natal.

Records: Only the original doubtful record.

Lepidonotus tenuisetosus (Gravier, 1901)
(fig. 1.14.a–e)

Euphione tenuisetosa Gravier, 1901 : 222, pl. 8 figs. 123–126, text-fig. 228–231.
Lepidonotus natalensis Day, 1951 : 9, fig. 1 e–l.
Lepidonotus tenuisetosus: Fauvel, 1953 : 36, fig. 14 c–f; Day, 1962 : 632.

Body oblong and up to 15 mm. long. Prostomium (fig. 1.14.a) longer than broad. First pair of eyes lateral and well back. Antennae and dorsal cirri smooth with a subterminal swelling and dark band. Median antenna twice the prostomial length, laterals shorter. Elytra fringed and the surface covered with innumerable small conical tubercles which are largest near the centre, and often bear blunt projections so as to appear star-shaped in plan. Parapodia (fig. 1.14.c) short and stout with bilabiate neuropodia. Notosetae (fig. 1.14.d) numerous, slender and spinulose to their tapered tips. Neurosetae (fig. 1.14.e) stouter, minutely bidentate or unidentate.

Type locality: Red Sea.

Records: Cape (32/28/i to 31/29/i) ; Natal (30/30/i, s to 28/31/i) ; Mocambique (23/35/i, s) ; Madagascar (i) – fairly common on rocks.

Distribution: Tropical West Africa ; Red Sea ; Indo-west-Pacific to Japan.

Lepidonotus cristatus (Grube, 1876)
(fig. 1.14.f–i)

Polynoe cristata Grube, 1876 : 62.
Lepidonotus cristatus: Gravier, 1901 : 210, pl. 7 figs. 104–110, pl. 9 fig. 136, text-figs. 214–218; Fauvel, 1953 : 35, fig. 13 n.

A very large stout species reaching 40 mm. Prostomium (fig. 1.14.f) longer than broad but partly covered by a square occipital fold. Median and lateral antennae subequal, about twice the prostomial length ; they are mounted on long ceratophores and are smooth with subterminal swellings. Anterior pair of eyes large and set well back ; posterior pair smaller, closer together and often hidden by the occipital fold. Elytra without marginal fringes. Each elytron (fig. 1.14.g) palette-shaped with a dark mark over the elytrophore and two large soft cushions ; surface covered with conical tubercles. Cirrigerous segments with swellings corresponding to the elytrophores. Dorsal cirri similar to the antennae and reach the ends of the neurosetae. Notosetae (fig. 1.14.h) finely but closely serrated and end in short tips. Neurosetae (fig. 1.14.i) stout with very numerous (ca. 24) rows of spinules, at first minute but becoming large distally before the long hooked tips; most neurosetae are unidentate but some have a very small secondary tooth.

Type locality: Philippine Islands.

Records: Mocambique (26/32/i) ; Madagascar (i).

Distribution: Red Sea (i) and tropical Indo-west-Pacific (i, s).

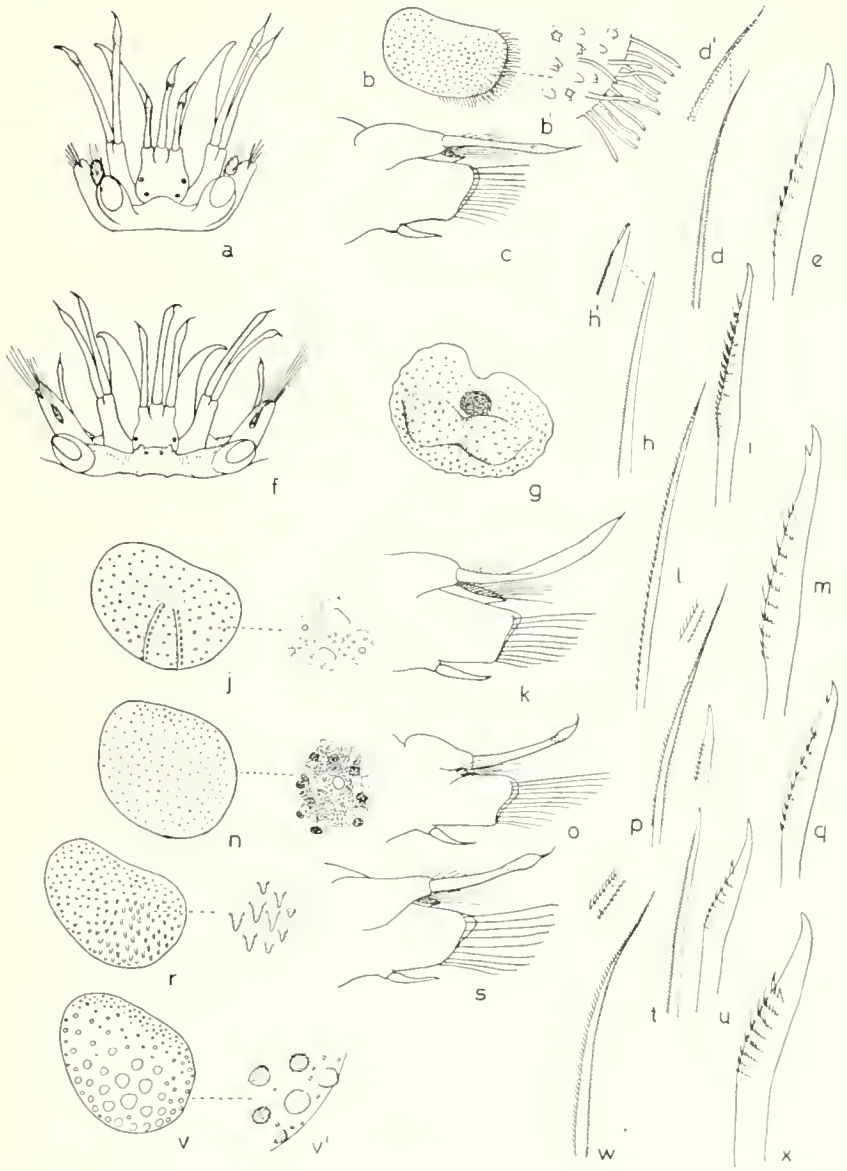

FIG. 1.14. *Lepidonotus tenuisetosus*. (A) Head. (B) Elytron. (C) Foot. (D) Notoseta. (E) Neuroseta. *Lepidonotus cristatus*. (F) Head. (G) Fourth elytron. (H) Notoseta. (I) Neuroseta. *Lepidonotus glaucus*. (J) Elytron. (K) Foot. (L) Notoseta. (M) Neuroseta. *Lepidonotus purpureus*. (N) Elytron. (O) Foot. (P) Notoseta. (Q) Neuroseta. *Lepidonotus semitectus*. (R) Third elytron. (S) Foot. (T) Notoseta. (U) Neuroseta. *Lepidonotus durbanensis*. (V) Third elytron. (W) Notoseta. (X) Neuroseta.

Lepidonotus glaucus (Peters, 1854)
(fig. 1.14.j–m)

Polynoe glauca Peters, 1854 : 610.
Lepidonotus platycirrus Day, 1951 : 11, fig. 2 a–f.
Lepidonotus glaucus: Day, 1957 : 60, with synonymy.

Length up to 20 mm. Colour blue-grey. Prostomium longer than broad with the anterior pair of eyes lateral and well back. Median antenna smooth and 2·5 times the prostomial length ; laterals a little shorter. Dorsal cirri (fig. 1.14.k) often flattened, taper evenly towards the tip and lack subterminal swellings. Elytra (fig. 1.14.j) brown or blue with smooth margins ; the surface has a scattering of squat ridged tubercles which appear as pale spots against the blue background ; often two ridges extend back from the point of attachment and bear larger keeled tubercles. Notosetae (fig. 1.14.l) few (ca. 10), and small, the longer ones being denticulate to their tapering tips. Neurosetae (fig. 1.14.m) stout and bidentate ; they are strongly denticulate in anterior feet but weakly so posteriorly.

Type locality : Mocambique.

Records : Natal (31/29/i) – a single specimen.

Distribution : Red Sea ; tropical Indian Ocean (i).

Lepidonotus purpureus Potts, 1910
(fig. 1.14.n–q)

Lepidonotus purpureus Potts, 1910 : 334, pl. 17 fig. 3 ; Day, 1957 : 61.

Body up to 20 mm. long. Colour mauve with a central white spot on each elytron. Prostomium hexagonal with long cirrophores. Median antenna 2·5 times the length of the prostomium, laterals only twice as long. Anterior pair of eyes lateral and well separated from the posterior pair. A well marked occipital fold with lateral ridges. Antennae and dorsal cirri (fig. 1.14.o) smooth with only slight subterminal swellings. Elytra (fig. 1.14.n) not fringed and smooth apart from a scattering of minute ovoid tubercles which appear as refringent dots among the paler and darker pigment cells. Notosetae (fig. 1.14.p) rather small and closely serrated to their fine tips. Neurosetae (fig. 1.14.q) stout with short spinulose blades and clearly bidentate tips.

Type locality : Zanzibar.

Records : Mocambique (26/32/i and 23/35/e) ; Madagascar (s) – a few specimens.

Distribution : Tropical Indian Ocean ; Australia ; New Zealand.

Lepidonotus semitectus Stimpson, 1856
(fig. 1.14.r–u)

Lepidonota semitecta Stimpson, 1856: 393; Seidler, 1923: 51 (with synonymy).
Lepidonotus wahlbergi Kinberg, 1857: 384.
Polynoe trochiscophora Schmarda, 1861: 151, pl. 36 fig. 310.
Lepidonotus clava semitecta: Willey, 1904: 256, pl. 13 fig. 4.

Body tough, rusty brown and up to 40 mm. long. Often the head and anterior pair of elytra are pale in contrast to the rest of the body. Prostomium longer than broad with the first pair of eyes well back and the second pair often hidden by the occipital fold. Median antenna longer than the prostomium, laterals a little shorter. Antennae, tentacular cirri and dorsal cirri (fig. 1.14.s) smooth with a swelling and a dark band preceding the filiform tip. Centre of dorsum not entirely covered by elytra. Individual elytra (fig. 1.14.r) tough, oval, entire with cylindro-conical tubercles which are longest and minutely granulose on the first two or three elytra and become ovoid posteriorly. Notosetae (fig. 1.14.t) fairly numerous, each short with close-set rows of small serrations preceding the long, sharply pointed tip. Neuropodium large; neurosetae (fig. 1.14.u) with about seven rows of spinules and strong, curved unidentate tips. There is no secondary tooth but the spinule of the last row is well developed and may simulate a secondary tooth.

Type locality: Cape of Good Hope.

Records: South West Africa (22/14/i and 26/15/i); Cape (from 29/16/i and 34/18/i, s to 32/28/i); Natal (31/29/i to 29/31/i). Very common under stones and in rocky dredgings.

Distribution: Endemic.

Lepidonotus durbanensis Day, 1934
(fig. 1.14.v–x)

Lepidonotus durbanensis Day, 1934: 18, fig. 1 a–c.

Body up to 30 mm. long, tough, grey with reddish brown elytra. Prostomium longer than broad with the first pair of eyes half-way back. Antennae and dorsal cirri smooth with a dark band at the subterminal swelling. Median antenna twice the length of the prostomium; laterals 1.5 times the prostomium. Elytra (fig. 1.14.v) oval with smooth margins and the surface beset with large, almost spherical tubercles of various sizes; the largest tubercles are sculptured like golf balls and the smaller tubercles have minutely scaly surfaces. Notosetae (fig. 1.14.w) small and closely serrated to their filiform tips. Neurosetae (fig. 1.14.x) very stout with short spinulose blades and unidentate curved tips though the last spinule is strong and may simulate a secondary tooth.

Type locality: Durban.

Records: Cape (34/22/s); Natal (29/31/i); Mocambique (26/32/i) – common on the rocky shores of Natal.

Distribution: Endemic.

PARAHALOSYDNA Horst, 1915

Body short with about 45 segments and 15 pairs of elytra, which cover most or all of the dorsum. All three antennae terminal in origin and arise at the same level. Notosetae present in all parapodia. Neurosetae unidentate to bidentate.

Type species: *Parahalosydna sibogae* Horst, 1915.

Parahalosydna capensis (McIntosh, 1885)
(fig. 1.15.a–d)

Polynoe capensis McIntosh, 1885: 114, pl. 4 fig. 4, pl. 15 fig. 1, pl. 9A figs. 4–5.

Body (fig. 1.15.a) oblong, about 25 mm. long with 15 pairs of elytra covering all except the last four to six segments. All three antennae (fig. 1.15.b) terminal in origin as in *Lepidonotus*. Median antenna unknown; laterals smooth and two thirds the prostomial length. Anterior pair of eyes lateral and almost half-way back. Dorsal cirri smooth and slightly swollen distally, not as long as the neurosetae. Notopodium well developed with numerous setae. Notosetae (fig. 1.15.c) long and stout with minute serrations and abruptly pointed tips. Neuropodium long with a pointed presetal lip. Neurosetae (fig. 1.15.d) long with weakly spinulose blades and bidentate tips, the secondary tooth being very small.

Type locality: 180 metres off the Cape of Good Hope.

Records: Cape (34/18/d) – a single record.

PSEUDOPOLYNOE Day, 1962

Body elongate with over 60 segments and 15–17 pairs of elytra which cover only the anterior half of the body. Posterior segments all have dorsal cirri. All three antennae terminal in origin and arise at the same level as in *Lepidonotus*. Notopodia small but notosetae present in all parapodia. Neuropodia stout and bilabiate. Neurosetae with short serrated blades and bidentate tips.

Type species: *Polynoe inhaca* Day, 1951.

Pseudopolynoe inhaca (Day, 1951)
(fig. 1.15.e–j)

Polynoe inhaca Day, 1951: 15, fig. 3 a–g.
Allmaniella inhaca: Day, 1957: 62.
Pseudopolynoe inhaca: Day, 1962: 634.

Body (fig. 1.15.e) elongate, tapered, up to 45 mm. long for 78 segments. Sixteen pairs of elytra covering the anterior half of the body, the posterior segments being all cirrigerous with three rows of fleshy tubercles on the dorsum. Prostomium (fig. 1.15.f) longer than broad with constrictions at the bases of the lateral ceratophores. Antennae smooth with slight subterminal swellings, the median being longer than

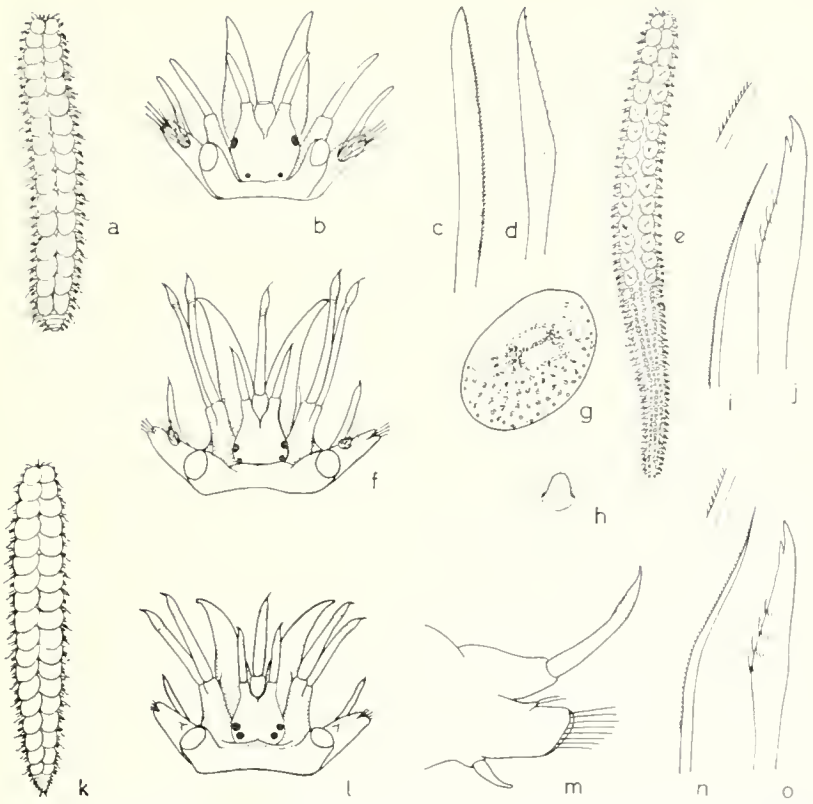

Fig. 1.15. *Parahalosydna capensis*. (A) Entire worm (twice natural size). (B) Head. (C) Notoseta. (D) Neuroseta (after McIntosh). *Pseudopolynoe inhaca*. (E) Entire worm (1·5 times natural size). (F) Head. (G) Elytron. (H) Elytrous tubercle. (I) Notoseta. (J) Neuroseta. *Halosydna alleni*. (K) Entire worm (twice natural size). (L) Head. (M) Anterior view of foot. (N) Notoseta. (O) Neuroseta.

the laterals and equal to twice the prostomial length. Palps short and stout. Elytra (fig. 1.15.g) oval but not large enough to cover the centre of the dorsum; individual elytra mottled grey with smooth margins and glabrous apart from a few small marginal tubercles (fig. 1.15.h). Notosetae (fig. 1.15.i) few, weak and spinulose to their fine tapered tips. Neurosetae (fig. 1.15.j) stout with short blades and strongly bidentate tips.

Type locality: Inhaca Is., Mocambique.

Records: Mocambique (26/32 i).

Distribution: No other records.

HALOSYDNA Kinberg, 1855
(including *HYPERHALOSYDNA* Augener, 1922 and *HALOSYDNELLA* Hartman, 1938)

Body with 37–55 segments and 18–24 pairs of elytra which cover most or all of the dorsum. Prostomium with all three antennae inserted terminally at the same level as in *Lepidonotus*. No prostomial peaks nor occipital fold. Notopodia poorly developed but notosetae are present in some notopodia. Neuropodia with equal presetal and postsetal lips. Neurosetae mainly bidentate.

Type species: *Halosydna patagonica* Kinberg, 1855.

Key to Species

1 Eighteen to nineteen pairs of elytra. Notosetae well developed (subgenus *Halosydnella*) (no S. African species)

– Twenty to twenty-four pairs of elytra. Notosetae few, occasionally absent from some feet ***H.* (*Hyperhalosydna*) *alleni***

Halosydna* (*Hyperhalosydna*) *alleni Day, 1934
(fig. 1.15.k–o)

Halosydna (*Hyperhalosydna*) *alleni* Day, 1934: 23, fig. 3 a–e.

Body (fig. 1.15.k) up to 35 mm. long for 55 segments. Twenty to twenty-four pairs of pale, mottled grey elytra extending almost to the end of the body. Prostomium (fig. 1.15.l) rectangular with both pairs of eyes on the posterior half and close together. All three antennae terminal in origin; the median is slightly longer than the prostomium and the laterals are two thirds its length. Antennae and dorsal cirri smooth, slightly swollen distally and banded before the terminal filament. Elytra with smooth margins and smooth, mottled surfaces. Notopodia (fig. 1.15.m) very small with two to four minute notosetae (fig. 1.15.n) which are serrated to their slender and tapered tips. Neurosetae (fig. 1.15.o) large and mainly bidentate with short spinulose blades; in the posterior feet of large specimens, however, there may be a single giant superior seta which is unidentate and practically devoid of spinules.

Type locality: False Bay, South Africa.

Records: Cape (34/18/i, 32/28/i, 31/30/i); Natal (30/30/i) – rare.

Distribution: Endemic.

LEPIDASTHENIA Malmgren, 1867
(including *LEPIDAMETRIA* Webster, 1879 and *LEPIDASTHENIELLA* Monro, 1924)

Body elongate and flattened with 60–200 segments and from 24 to more than 100 pairs of elytra which extend to the end of the body but may be too small to cover the centre of the dorsum. Elytra on segment 2, 4, 5, 7 and alternate segments anteriorly, but become irregular posteriorly or may occur on every segment towards the end

of the body. All three antennae inserted terminally at the same level as in *Lepidonotus*. No prostomial peaks but an occipital fold may be present. Dorsal cirri smooth, often elongate. Notopodia small and notosetae either few or absent. Neuropodia long with equal presetal and postsetal lips. Neurosetae unidentate or bidentate; often with a superior group of fine setae anteriorly or a single giant seta posteriorly. *Nectochaeta*, the planktonic stage, has fewer segments, long swollen elytrophores and numerous fine superior neurosetae.

Type species: *Polynoe elegans* Grube, 1840.

Key to Species

1 Neurosetae all fine and unidentate 2
– Neurosetae mainly stout and bidentate though superior fine unidentate forms may occur 3
2 Neurosetae spinulose with hair-like tips . . . . . ***L. sp.*** (AFR. 790)
– Neurosetae with blunt naked tips (fig. 1.16.d) . . . . ***L. mossambica*** (p. 89)
3 Elytra minute after the first few (fig. 1.16.f) . . . . . ***L. microlepis*** (p. 90)
– All elytra at least as broad as the segment is long 4
4 Elytra speckled. Fine superior neurosetae absent or limited to a few anterior feet. A giant unidentate seta in middle segments (fig. 1.16.j, m). . . ***L. elegans*** (p. 90)
– Elytra half brown and half white (fig. 1.16.o). Fine unidentate superior neurosetae in all feet. No giant posterior setae. . . . . ***L. brunnea*** (p. 92)
– Elytra with a central dark spot (fig. 1.16.t). Fine unidentate superior setae in a few anterior feet; no giant posterior setae . . . . . ***L. maculata*** (p. 92)

Lepidasthenia mossambica Day, 1962
(fig. 1.16.a–d)

Lepidasthenia mossambica Day, 1962: 632, fig. 2 a–d.

Length up to 100 mm. for 150 segments. Dorsum with regular brown cross-bars. Prostomium (fig. 1.16.a) rectangular and partly covered by a large occipital fold with a papillose margin. First pair of eyes well back and lateral in position. Antennae slender with a vague subterminal swelling; median twice the length of the prostomium and laterals a little shorter. Palps very long. Dorsal cirri tapered and just reach the tips of the neurosetae. Fifty-six pairs of elytra which are not large enough to cover the centre of the dorsum but extend to the posterior end of the body. They alternate regularly with the cirri anteriorly but become irregular posteriorly.

Each is rounded and has a smooth surface with a dark bar extending inward from the elythrophore (see fig. 1.16.b); posteriorly the bar is reduced to a spot. Bases of anterior parapodia (fig. 1.16.c) papillose both dorsally and ventrally. Notopodia as small papillae which lack setae except rarely on anterior feet. When present the few notosetae have 15 rows of spinules preceding the blunt, almost truncate tips. Neurosetae (fig. 1.16.d) with 10 rows of spinules and blunt unidentate tips; no superior group of slender neurosetae in anterior feet and no giant neuroseta in posterior feet.

Type locality: Inhaca Is., Mocambique.

Records: Mocambique (26/32/i).

Distribution: No other records.

Lepidasthenia microlepis Potts, 1910
(fig. 1.16.e–h)

Lepidasthenia microlepis Potts, 1910: 343, pl. 19 fig. 17, pl. 21 fig. 52; Day, 1951: 18.

Body about 25 mm. long for 65 segments which are banded brown at irregular intervals. Prostomium (fig. 1.16.e) large. Anterior pair of eyes laterally situated. Median antenna 1·5 times the length of the prostomium, laterals slightly shorter. Dorsal cirri (fig. 1.16.g) pale and tapered, longer than the neurosetae. Nineteen pairs of elytra; the first (fig. 1.16.f[1]) is fairly large and brown but the next few decrease rapidly in size (figs. f[3] and f[5]) and succeeding ones are even smaller and colourless, being mere caps on the small elytrophores. Parapodia without papillae. Notopodia very small; notosetae absent. Neurosetae (fig. 1.16.h) with short spinulose blades and bidentate tips, the secondary tooth being almost equal to the apical one and hardly diverging from it.

Type locality: Maldive Islands.

Records: Natal (30/30/i, 29/31/i); Mocambique (26/32/i).

Distribution: Tropical Indo-west-Pacific (i).

Lepidasthenia elegans (Grube, 1840)
(fig. 1.16.i–m)

Polynoe elegans Grube, 1840: 85.
Lepidasthenia elegans: Fauvel, 1923: 88, fig. 33 a–g; Day, 1960: 284.

Body elongate and flattened, up to 70 mm. long for 100 segments. Purple bars across most segments and elytra speckled with a white spot over the elytrophore. Prostomium (fig. 1.16.i) bilobed with long antennae having banded subterminal swellings. Eyes well back. A small nuchal fold with a smooth margin. Dorsal cirri (fig. 1.16.k) of the first few segments long and have subterminal swellings but later ones shorter, hardly extending beyond the neuropodia. Elytra (fig. 1.16.j) small and leave most of the back uncovered. Each is rounded with a smooth, speckled surface. Parapodia (fig. 1.16.k) without papillae. Notopodia small, notosetae usually absent but an occasional seta with weak serrations may occur in anterior feet. Neurosetae include: (a) two to three superior slender setae in anterior feet (sometimes missing); (b) numerous bidentate setae (fig. 1.16.l) with short blades and a secondary tooth which is definitely smaller than the apical one; (c) a giant brown unidentate superior seta (fig. 1.16.m) in posterior feet and sometimes other unidentate setae below it.

Type locality: Mediterranean Sea.

Records: Cape (34/18/s, 33/25/s); Mocambique (26/32/i); Madagascar (s) – an occasional specimen commensal in the tubes of Terbellidae.

Distribution: Mediterranean; Indo-west-Pacific.

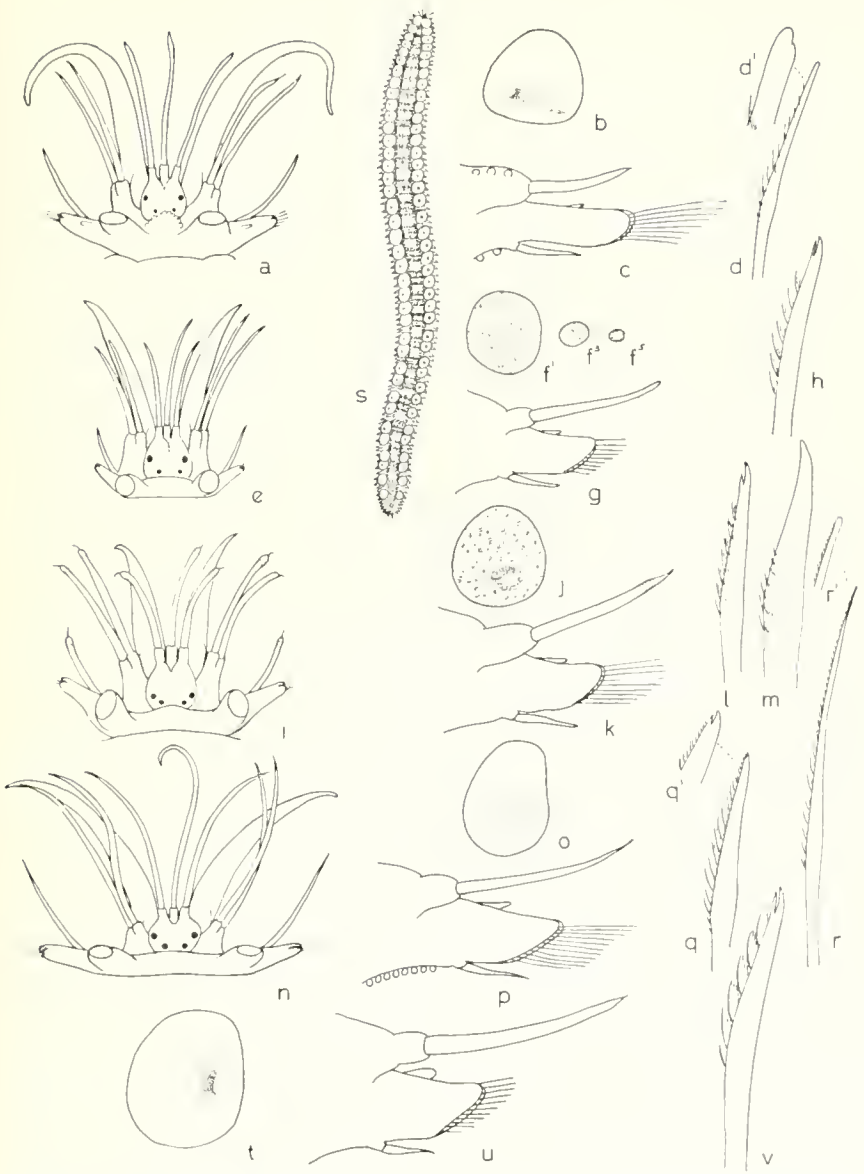

FIG. 1.16. *Lepidasthenia mossambica.* (A) Head. (B) Elytron. (C) Foot. (D) Neuroseta. *Lepidasthenia microlepis.* (E) Head. ($F^{1, 3, 5}$) First, third and fifth elytron. (G) Foot. (H) Neuroseta. *Lepidasthenia elegans.* (I) Head. (J) Elytron. (K) Anterior foot. (L) Normal neuroseta. (M) Giant neuroseta. *Lepidasthenia brunnea.* (N) Head. (O) Elytron. (P) Foot. (Q) Middle bidentate neuroseta. (R) Superior fine neuroseta. *Lepidasthenia maculata.* (S) Entire worm (natural size). (T) Elytron. (U) Foot. (V) Neuroseta.

Lepidasthenia brunnea Day, 1960
(fig. 1.16.n–r)

Lepidasthenia brunnea Day, 1960: 285, fig. 3 a–d.

Body flattened and elongate, about 50 mm. long for 100 segments. Dorsum pale brown, elytra half brown and half white. Prostomium (fig. 1.16.n) broad and bilobed with very long slender antennae equal to the body width. Eyes large. No nuchal fold. Anterior dorsal cirri very long but later ones just exceed the tips of the neuropodia and lack subterminal swellings. Twenty-five or more pairs of elytra (fig. 1.16.o), each large and oval with the postero-medial half brown and the outer half pale. Notopodia small. No notosetae. Neuropodia (fig. 1.16.p) large and pointed with the setae issuing from tapered lips. Ventral cirri short and a row of six to eight papillae on the ventral surface of each parapodium. Neurosetae of all feet include numerous fine superior setae (fig. 1.16.r) with long slender blades feathered to their hair-like tips and stouter bidentate setae (fig. 1.16.q) with shorter blades and small apical teeth. Secondary tooth smaller than the terminal one. No giant seta in posterior feet.

Type locality: False Bay, South Africa.

Records: Cape (34/17 d, 34/18 s); Natal (29/31 d) – in *Phyllochaetopterus* tubes.

Distribution: ? New Zealand.

Lepidasthenia maculata Potts, 1910
(fig. 1.16.s–v)

Lepidasthenia maculata Potts, 1910: 344, pl. 20 fig. 33, pl. 21 fig. 51; Seidler, 1923: 157.

Body (fig. 1.16.s) elongate and flattened, up to 70 mm. long for 100 segments. Purple bars across most segments except alternate cirrigerous ones; elytra (fig. 1.16.t) with a dark spot. Prostomium bilobed with long slender antennae which lack subterminal swellings. Eyes large. A prominent nuchal fold which may be papillose. Dorsal cirri extend beyond the tips of the neurosetae. About 30 pairs of elytra which extend over the whole length of the body but are not large enough to cover the centre of the dorsum. Individual elytra smooth and oval with a dark spot in the centre. Parapodia (fig. 1.16.u) without papillae. Notopodium reduced to a conical papilla which seldom bears setae. Neuropodium large, bilabiate and obliquely truncate. Neurosetae (fig. 1.16.v) mainly bidentate with the secondary tooth almost as long as the terminal one so that the end appears bifid; in addition the anterior feet have two to four long fine superior setae with blunt tips. No enlarged superior seta in posterior feet.

Type locality: Zanzibar.

Records: Mocambique (23/35 c) – several specimens commensal in the burrows of *Dasybranchus caducus*.

Distribution: North Atlantic between Scotland (s), ? North Carolina, Azores and Morocco (s, d); Zanzibar (i).

Subfamily **POLYODONTINAE** Pflugfelder, 1934

Body vermiform and rounded in section with numerous segments. Animal tubicolous in a fibrous tube. Prostomium bilobed with two stalked eyes or four sessile ones. 0–3 antennae, the median antenna being inserted dorsally and the laterals terminally below the eye-stalks. Pharynx with four chitinous jaws which are denticulate basally. Numerous pairs of elytra extending over the whole length of the body but too small to cover the centre of the dorsum. Spinning glands in the notopodia which produce the fibres composing the tube. Branchial vesicles sometimes present on the parapodia. Notosetae few and slender, neurosetae of three different types.

Records from southern Africa

Eupanthalis kinbergi McIntosh	
as *Eupanthalis tubifex*	33As
Panthalis oerstedi var. *capensis* McIntosh	41Cs
Polyodontes melanonotus (Grube)	40Pi, 45Pi, 53Mi
as *Panthalis melanonotus* Grube	27Mi

BIOLOGICAL NOTES

The polyodontids are a rare group of large tubicolous worms living in sand or mud. The tube is composed of long silky threads secreted by the segmental spinning glands and woven into a criss-cross spiral which is surprisingly tough and may extend a metre or more down into the mud. The worm itself may exceed 300 mm. in length. Polyodontids appear to be scavengers or omnivores. They have formidable jaws and apparently extend the anterior, flattened part of the body well out of the tube in their search for food. It is on these anterior segments that the branchial papillae are found while the posterior part of the body is soft and rounded.

THE MAIN DIAGNOSTIC CHARACTERS

The few genera may be distinguished by the structure of the eyes, the number of antennae, the presence of soft bladder-like branchial papillae on the anterior feet and the nature of the setae. All South African genera have three antennae. The anterior pair of eyes is borne on stout stalks (ommatophores) and may be pigmented or not ; the posterior pair of eyes when present is always sessile. The soft baggy branchial papillae or vesicles are variable in development and tend to be limited to anterior segments. The notosetae are few, weak and uniform in structure. The neurosetae are in three groups one above the other. In *Eupanthalis* the superior group are tapered and uniformly spinulose. In *Panthalis* the superior group have blunt ends (fig. 1.17.d) beyond which project a series of long hairs like a paint brush and are termed *penicillate*. In *Polyodontes melanonotus* the superior setae are "*pseudopenicillate*" and intermediate between these two types with the tapered tip of the blade just projecting from the clump of hair-like spinules (fig. 1.17.l).

KEY TO GENERA

1 Three antennae. Anterior pair of eyes stalked. Branchial vesicles present or absent . . 2
– Three antennae. Four sessile eyes. Branchial vesicles absent . . . . ***EUPANTHALIS***
2 Branchial vesicles present (fig. 1.17.i). Superior neurosetae not truly penicillate ***POLYODONTES***
– Branchial vesicles absent. Superior neurosetae are truly penicillate . . ***PANTHALIS***

EUPANTHALIS McIntosh, 1876

Body vermiform with numerous segments. Prostomium bilobed with four sessile eyes. No branchial vesicles on anterior feet. Notosetae restricted to anterior feet and later notopodia have spinning glands instead. Neurosetae include (a) a superior group of tapered and spinulose setae, (b) a middle group of stout aristate setae with a hairy patch on the blunt tip, and (c) an inferior group of serrated, tapering setae.

TYPE SPECIES: *Eupanthalis kinbergi* McIntosh, 1876.

Eupanthalis kinbergi McIntosh, 1876
(fig. 1.17.a–f)

Eupanthalis kinbergi McIntosh, 1876a: 404, pl. 72 figs. 12–16; Fauvel, 1923: 100, fig. 38 i–q.

Body up to 130 mm. long with more than 100 segments. Prostomium (fig. 1.17.a) bilobed with four sessile eyes in a rectangle. Median antenna postero-dorsal in origin, laterals terminal and longer than the prostomium. Palps very long. Jaws with four to five denticles at the base. The papillae on the dorsal margin of the proboscis are simple or bifid, the ventral ones trilobed. Dorsal cirri short and conical. Elytra smooth and oval; the first few meet over the back but the posterior ones are lateral. A spinning gland from the 8th or 9th notopodium onwards. No branchial vesicles. Notopodium compressed and bears a few serrated capillaries. Neuropodium (fig. 1.17.b, c) stout and truncate with three groups of setae; (a) a superior group of spinulose setae (fig. 1.17.d), (b) a middle group of stout aristate setae (fig. 1.17.e) which develop tapered hairy ends inferiorly and (c) an inferior group of serrulate setae (fig. 1.17.f) with curved and spirally serrated blades.

TYPE LOCALITY: Deep waters of North Atlantic.

RECORDS: Angola (s).

DISTRIBUTION: North Atlantic; Mediterranean (d).

POLYODONTES Renier, 1832

Body elongate and up to 300 mm. long. Prostomium bilobed with the anterior pair of eyes stalked and usually a small pair of sessile ones behind. Median antenna inserted dorsally, laterals terminal, under the eye-stalks. First foot not obviously modified. Branchial vesicles on anterior feet. Elytra extending over the whole

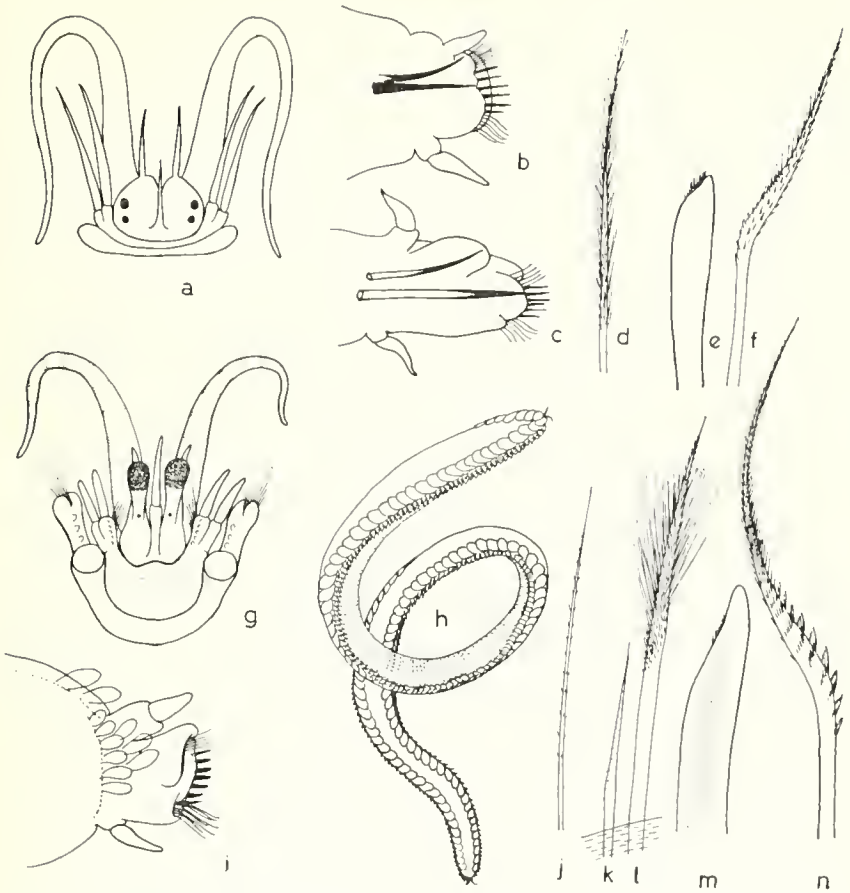

Fig. 1.17. *Eupanthalis kinbergi* (after Fauvel). (A) Head. (B) Anterior foot. (C) Posterior foot. (D) Superior spinulose neuroseta. (E) Aristate neuroseta. (F) Inferior serrulate neuroseta. *Polyodontes melanonotus*. (G) Head. (H) Entire worm (half natural size). (I) Anterior foot with branchial vesicles. (J) Notoseta. (K) Superior fine neuroseta. (L) Superior pseudopenicillate neuroseta. (M) Aristate neuroseta. (N) Inferior serrulate neuroseta.

length of the body but too small to meet over the back. Notopodium flattened and anterior to the neuropodium. Notosetae few, slender and serrated. Neuropodium stout and truncate with three types of setae; (a) a slender superior series with tapering, spinulose blades but not truly penicillate; (b) a middle series of stout acicular setae often with a patch of hairs near the tip (aristate setae); (c) an inferior group of spirally serrated setae tapering to slender tips.

Type species: *Phyllodoce maxillosa* Ranzani, 1817.

Polyodontes melanonotus (Grube, 1876)
(fig. 1.17.g-n)

Panthalis melanonotus Grube, 1876: 71.
Polyodontes melanonotus: Fauvel, 1953: 72, fig. 33 c g; Day, 1962: 634.

A large tubicolous species reaching 300 mm. Body (fig. 1.17.h) stout anteriorly and flattened posteriorly. Palps long and banded. Prostomium (fig. 1.17.g) elongate and markedly bilobed with a raised ridge bearing the median antenna. Anterior pair of stalked eyes, large, pear-shaped and well pigmented; posterior pair of sessile eyes minute and situated on the bases of the ommatophores. Median antenna tapering, as long as the prostomium. Lateral antennae slightly shorter than the prostomium and usually hidden under the ommatophores. First segment almost as long as broad and forms a small occipital fold. First foot elongated, directed forwards and bears a pair of tentacular cirri and several fine setae. Numerous branchial vesicles (fig. 1.17.i) on anterior feet. Elytra oval in outline, smooth, brownish, not meeting across the dorsum; the outer edges tend to curl up to form a pocket. Notopodia as antero-dorsal folds above the very stout neuropodia. Notosetae (fig. 1.17.j) few, very fine, minutely spinulose. An internal coiled spinning gland opens in the slit between the notopodium and neuropodium from setiger 8 onwards. Superior neurosetae include a few short, very fine capillaries (fig. 1.17.k) and a longer series of pseudopenicillate setae (fig. 1.17.l) which vary in regard to the length of spinules, but all have a tuft of long spinules like a paint brush from which the long tapering tip protrudes. The middle group of very stout aristate setae (fig. 1.17.m) include some with stout blunt tips, others with a subterminal hairy patch and the inferior ones may have a subterminal hairy spike. Inferior setae (fig. 1.17.n) slender with recurved and spirally-serrated blades.

Type locality: Philippine Islands.

Records: Mocambique (23/35 e) – occasionally found burrowing in sandy mud.

Distribution: Indo-Pacific (i, s); tropical West Africa from Senegal to the Congo (i, s).

PANTHALIS Kinberg, 1857

Body elongate and vermiform. Animal tubicolous. Prostomium with a pair of bulbous, non-pigmented eye-stalks. Three antennae, the median being inserted dorsally and the laterals terminally under the eye-stalks. Branchial tubercles absent. First foot modified. Notopodium small with few notosetae. Numerous elytra which extend over the whole length of the body but do not cover the dorsum. Neurosetae of three basic types: a superior group including finely serrated to penicillate forms with an abrupt tip beyond which extend a bunch of long hairs; (b) a middle group of stout aristate setae and (c) an inferior group of tapered and spirally serrated setae.

Type species: *Panthalis oerstedi* Kinberg, 1857.

Panthalis oerstedi capensis McIntosh, 1925

Panthalis oerstedi var. *capensis* McIntosh, 1925 : 31.

Length up to 120 mm. Prostomium small with the median antenna extending forwards beyond the eye-stalks. Lateral antennae thicker than the median and each with a brown spot. Elytra smooth and cover the head but further back most of the dorsum is naked. Notosetae slender and minutely spinulose. Neurosetae of three groups : (a) superior group unknown ; (b) stout acicular setae (aristate setae) with rather flattened spear-like tips bearing a group of spinules ; (c) an inferior group of serrated setae with hairy tips projecting from a basal group of long spinules.

Type locality : South Africa.

Records : Eastern Cape (32/28/s) – a single specimen.

Subfamily **SIGALIONINAE** Malmgren, 1867

Body elongate and somewhat flattened with numerous segments. Prostomium rounded with four sessile eyes and one to three antennae. Four chitinous jaws. Elytra numerous and extend over the whole length of the body ; they are inserted on alternate segments anteriorly but on every segment from about the 25th onwards. Dorsal cirri absent except sometimes on the third setiger. Cirriform branchiae arise from the elytrophores of all except a few anterior feet. Notosetae simple and usually spinulose. Neurosetae compound and often accompanied by a few superior simple setae.

Records from southern Africa

Euleanira ehlersi Horst	—Nd
Leanira hystricis Ehlers	32Cd, Nd
Pholoe dorsipapillata Marenzeller	56Cs, —NsPd
Pholoe minuta (Fabricius)	21Ci
as *Pholoe minuta* var. *inornata* Johnston	26Wis, 50Cs
Psammolyce articulata Day	50Cs
Psammolyce petersi Kinberg	3Pi
Sigalion capense Day	50Cs
Sigalion mathildae Aud. & M. Edw.	27Mi
Sigalion squamatum Delle Chiaje	50Cs
Sthenelais boa (Johnston)	13Ci, 15Cs, 32Cs, 35Ni, 36Ci, 40Ni, Pi, 41Ci, 50Cs
Sthenelais limicola (Ehlers)	50Csd
Sthenelais oculata (non Peters)	3Pi
Sthenelais papillosa Day	50Cs
Sthenolepis incisa	
as *Leanira incisa* (Grube)	33As
Sthenolepis tetragona (Oersted)	—Ca

Thalenessa oculata (Peters)	41Ci, 50Cs
as *Sigalion oculatum* Peters	1Pi
as *Sthenelais dendrolepis* (non Claparède) . .	32Ns
as *Euthalenessa insignis* Ehlers . . .	15Cs

BIOLOGICAL NOTES

The sigalionids are a group of burrowing predators living in sand or mud. *Sthenelais boa* is fairly common in sandy pools on rocky shores and *Thalenessa oculata* lives on sandy beaches. The latter has an unusual method of burrowing. Instead of digging in head first, it lies flat on the sand and by rotation of its parapodia scoops out the sand below until the whole body is covered. Presumably this is an adaptation for life in an area where it is often liable to be uncovered by the eroding action of the waves. *Sthenelais limicola, S. papillosa and Sigalion mathildae* live in sand at deeper levels. *Psammolyce* appears to prefer gravel while the various species of *Leanira* are deep-sea mud-dwellers, many of them lacking eyes. In all cases the elytra are elevated above the dorsum and the notosetae arch over their edges so as to form a pair of respiratory channels above the parapodia in which the gills are situated. The only genus which lacks gills is the minute *Pholoe* which is not a burrower but creeps over the surface of silty sand.

THE MAIN DIAGNOSTIC CHARACTERS

The generic distinctions are based primarily on the nature of the antennae, the presence or absence of gills on the elytrophores and the possession of a dorsal cirrus on setiger 3. Most genera are large, only *Pholoe* being less than 20 mm. long. *Pholoe* is also the only genus with a single antenna and no gills. In some genera the median antenna is borne on a ceratophore which may have basal lappets or "ctenidia", in others it may be small and papilliform or even absent so that only the lateral antennae are left. The lateral antennae may be fused to the dorsal surface of the tentacular segment which extends forwards anterior to the prostomium.

The elytra change along the length of the body and both anterior and posterior ones should be examined. The cirriform branchiae are attached below the elytra usually on the outer sides of the elytrophores but some occur on the median sides. Both the notopodium and the neuropodium are well developed and both have long papillae or *stylodes* near their ends; these change after the first few segments but are useful specific characters. The notosetae are fairly uniform and seldom of taxonomic value. The neurosetae, however, are most useful. They sometimes include a few superior simple setae with bipennate blades but most of the neurosetae are compound. In *Leanira* the blades are tapered to slender unidentate tips and may be termed *spinigerous*; moreover they are ornamented with rows of internal structures which give a laddered effect when seen by transmitted light. In other genera, however, the tips of the blades are obviously or minutely bidentate and may be termed *falcigerous*. The blades may be short and stout or long and tapered with incomplete joints and are then termed *multiarticulate* or *pluriarticulate*. The degree of serration of the shaft-head is also a useful character.

Key to Genera

1 Body small, less than 15 mm. long. Cirriform branchiae absent. (Median antenna without basal lappets) . . . . . ***PHOLOE*** (p. 99)
– Body large, well over 15 mm. long. Cirriform branchiae on the elytrophores after the first few feet (fig. 1, 18.b) 2
2 Spinning glands present in middle and posterior notopodia. (Neurosetae compound with very short simple blades, Animal tubicolous) . . . . . ***EULEANIRA*** (p. 101)
– Spinning glands absent 3
3 Compound neurosetae with falcigerous blades which are sometimes multiarticulate . . 4
– Compound neurosetae with spinigerous laddered blades 7
4 Median antenna with basal lappets on the ceratophore . . ***STHENELAIS*** (p. 110)
– Median antenna, if present, without basal lappets on the ceratophore 5
5 Median antenna with a large ceratophore. Elytra with adhesive papillae and covered with sand . . . . . ***PSAMMOLYCE*** (p. 105)
– Median antenna absent or small and without a ceratophore. Elytra with smooth, clean surfaces 6
6 Tentacular segment with two bundles of setae. Median antenna may be absent ***SIGALION*** (p. 101)
– Tentacular segment with one bundle of setae. Median antenna always present ***THALENESSA*** (p. 107)
7 Median antenna with basal lappets on the ceratophore . . ***STHENOLEPIS*** (p. 112)
– Median antenna without basal lappets . . . . . ***LEANIRA*** (p. 111)

PHOLOE Johnston, 1839

Body small, oblong, less than 20 mm. long with 35–75 segments. Prostomium rounded with a median antenna mounted on a short ceratophore without basal lappets. Lateral antennae absent or minute and fused to the bases of the tentacular cirri. Two pairs of eyes coalescent on each side. One or two pairs of tentacular cirri with or without setae at the base. No dorsal cirri. Numerous pairs of elytra covering the dorsum; they arise on alternate segments up to the 23rd and on every segment thereafter. No cirriform branchiae on the elytrophores. Parapodia biramous. Notosetae are small spinulose capillaries. Neurosetae are compound with simple falcigerous blades.

Type species: *Aphrodita minuta* Fabricius, 1780.

Key to Species

1 Elytra very thick, with concentric growth lines. One pair of tentacular cirri with numerous setae at the base (fig. 1.18.h–i) . . . . . ***P. dorsipapillata***
– Elytra normal, without concentric growth lines. Two pairs of tentacular cirri without setae at the base (fig. 1.18.b–c) . . . . . ***P. minuta***

Pholoe dorsipapillata Marenzeller, 1893
(fig. 1.18.g–i)

Pholoe dorsipapillata Marenzeller, 1893: 6, pl. 1 fig. 3; Fauvel, 1923: 119, fig. 44 n–q; Day, 1963b: 389.

Body about 10 mm. long for 35–40 segments, and covered with hard elytra which leave the middle of the dorsum naked and papillose. Parapodia and ventrum with a few elongate papillae. Prostomium (fig. 1.18.h) broader than long and partly covered by a fold of the first elytrigerous segment. Two pairs of coalescent eyes. Median antenna long with a papillose subterminal swelling. Lateral antennae either absent or represented by minute projections fused to the bases of the tentacular cirri. A single pair of tentacular cirri similar to the median antenna with numerous fine setae arising from the stout base (see footnote).* Palps very short and swollen basally. Elytra (fig. 1.18.i) triangular with rounded corners. They are very thick, almost brittle with marked concentric growth lines. Long secretory papillae on exposed margins and surface. Notosetae numerous, fine and serrated with tapered tips. Neuropodium with a few elongate apical papillae. Neurosetae (fig. 1.18.g) compound with unidentate blades which are rather longer in the first few feet. Shaft-heads very finely serrated. Ventral cirri short with papillose swollen bases and knobbed tips.

Type locality: 381 metres in Mediterranean.

Records: Eastern Cape (33/28/s); Natal (29/32/d); Mocambique (24/35/d).

Distribution: Mediterranean (d); Azores (d).

Pholoe minuta (Fabricius, 1780)
(fig. 1.18.a–f)

Aphrodita minuta Fabricius, 1780: 514.
Pholoe minuta: Fauvel, 1923: 120, fig. 44a–h.

Body (fig. 1.18.a) minute, about 10 mm. long with 40–70 segments. Prostomium (fig. 1.18.b) small and rounded with four eyes which coalesce on each side. Median antenna borne on a stout ceratophore and lightly papillose. Palps short and stout. Two pairs of tentacular cirri longer than the median antenna. No setae at the base of the tentacular cirri. Elytra (fig. 1.18.c) oval to reniform, the surface bearing short secretory papillae (c[1]) with longer ones on the margin. Many are wrinkled but none clearly annulated. Parapodia (fig. 1.18.d) covered with rounded secretory papillae. Notosetae (fig. 1.18.e) very fine, tapering and minutely spinulose. Neurosetae (fig. 1.18.f) few, stout, compound and falcigerous with faintly spinous shaft-heads and unidentate hooked blades.

Type locality: Greenland.

Records: South West Africa (22/14/i, s and 26/15/s) around the Cape to 33/28/s – common in dredgings.

Distribution: Arctic Ocean; N. Pacific; N. Atlantic from Greenland and European coasts to Morocco (i, s); Mediterranean.

*Fauvel (1923) states that the Mediterranean form has two pairs of tentacular cirri and makes no mention of setae.

EULEANIRA Horst, 1917

Prostomium with a median antenna having basal flaps on the ceratophore; lateral antennae fused to the bases of the tentacular segment. Parapodia with ctenidia and papillae. No dorsal cirrus on setiger 3. Spinning glands in posterior notopodia. Notosetae as simple spinulose capillaries; neurosetae compound with short, simple knife-like or conical appendices.

Type species: *Euleanira ehlersi* Horst, 1917.

Euleanira ehlersi Horst, 1917

Euleanira ehlersi Horst, 1917: 122, pl. 27 figs. 1–5.

Body rather flattened, 25 mm. long for 75 segments and encased in a fibrous tube stiffened with mud. Prostomium rounded, with four eyes, the anterior pair being the larger. Median antenna mounted on a short ceratophore with basal lappets; ceratostyle 1·5 times the length of the prostomium. Lateral antennae short and fused to the bases of the tentacular segment. Two pairs of smooth tentacular cirri of which the dorsal is longer than the ventral. No dorsal cirrus on setiger 3. Elytra smooth and oval without marginal notches or papillae but with a transverse arc of brown pigment. They are present on setigers 2, 4, 5, 7 and alternate segments to the 21st then on all segments. Elytrophores with only a short conical branchial projection. Notopodia swollen but lack stylodes. Neuropodia without stylodes but with three low bracts, one anterior, one ventral and one posterior. Notosetae are long fine capillaries with whorls of minute spinules. Spinning glands in the notopodia from about the 20th foot. Neurosetae are all compound. A few on the most anterior feet have simple tapered blades but all the rest have short conical or sickle-shaped blades without any sign of sculpturing or falcigerous tips.

Type locality: Madura Strait, Indonesia.

Records: Natal (29/32/s, 29/31/d).

SIGALION Audouin & Milne Edwards, 1832
(characters emended)

Body elongate with numerous segments. Prostomium oblong with two pairs of small antennae arising from the anterior margin and sometimes a small median dorsal one as well. The first setiger projects forwards and bears two pairs of tentacular cirri and two bundles of simple capillaries. Dorsal cirrus on setiger 3 reduced or absent. Cirriform branchiae arise from the elytrophores of the 4th and 5th and all subsequent feet. Three ciliated cushions (ctenidia) above the notopodium. Elytra large and bear bipennate papillae on the external margin. Notosetae numerous, fine and smooth or minutely serrate. Neurosetae are mainly compound with bidentate blades of various types but there are usually a few simple bipennate setae as well.

Type species: *Sigalion mathildae* Audouin & Milne Edwards, 1832.

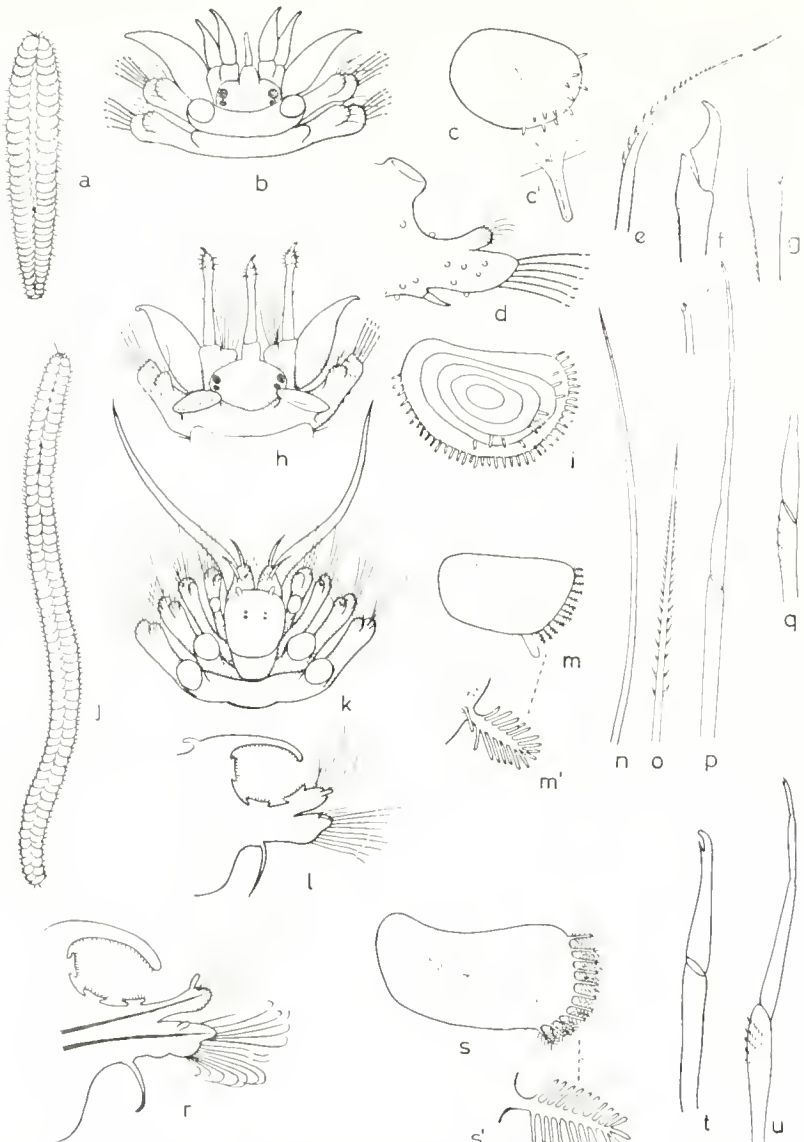

FIG. 1.18. *Pholoe minuta*. (A) Entire worm (four times natural size). (B) Head. (C, C¹) Elytron and details of marginal papilla. (D) Foot. (E) Notoseta. (F) Neuroseta. *Pholoe dorsipapillata*. (G) Neuroseta. (H) Head. (I) Elytron. *Sigalion capense*. (J) Entire worm (natural size). (K) Head. (L) Foot. (M, M¹) Elytron and details of marginal papilla. (N) Notoseta. (O) Superior bipennate neuroseta. (P) Multiarticulate neuroseta. (Q) Serrated shaft-head. *Sigalion mathildae* (modified from Fauvel). (R) Foot. (S, S¹) Elytron and details of marginal papilla. (T) Neuroseta with a simple blade. (U) Neuroseta with a serrated shaft-head and pluriarticulate blade.

Key to Species

1 All compound setae with pluriarticulate blades (fig. 1.18.p) . . . . . *S. capense*
– Compound setae include some with simple blades (fig. 1.18.t) others pluriarticulate . 2
2 Presetal lip of neuropodium well marked; bipennate marginal papillae of elytra with 15 pairs of branches (fig. 1.18.s[1]). . . . . *S. mathildae*
– Presetal lip of neuropodium rudimentary; bipennate marginal papillae of elytra with six to eight branches (fig. 1.19.c[1]) . . . . . *S. squamatum*

Sigalion capense Day, 1960
(fig. 1.18.j–q)

Sigalion capense Day, 1960: 291, fig. 4 a–f.

Body (fig. 1.18.j) about 30 mm. long, white, square in section. Prostomium (fig. 1.18.k) oblong, rounded posteriorly. Anterior and posterior pairs of eyes very close together. All antennae very small, median one often lost. Tentacular cirri (of setiger 1) subequal. A dorsal cirrus on setiger 3. Cirriform branchial arise from the outer sides of the bases of the elytrophores from setiger 4 onwards and from the medial sides from setiger 5. Elytrophores large, dorsally contiguous and may contain eggs. Elytra (fig. 1.18.m) quadrangular with 10–15 bipennate marginal papillae (m^1) each having four to eight pairs of branches. Notopodium (fig. 1.18.l) swollen distally with three ciliated cushions (ctenidia) on its superior margin, no obvious patch of tubercles on the anterior face, but a single large presetal papilla or stylode at its end. Notosetae (fig. 1.18.n) long and fine with hair-like tips and often with minute serrations on the convex margin. Neuropodium obliquely truncate with a conical acicular lobe, a vestigial presetal lip, a triangular postsetal lip, and a long ventral cirrus. Neurosetae include three to six simple bipennate setae superiorly (fig. 1.18.o) and numerous compound setae (fig. 1.18.p, q) all of which have pluriarticulate blades and minute, bidentate tips. Three to four superior ones have stout serrated shaft-heads and the remainder have smooth shaft heads. The inferior group includes very numerous fine compound setae with smooth shaft-heads and pluriarticulate blades.

Type locality: False Bay, South Africa.

Records: Cape (34/18/s, 34/22/s) and Natal (29/31/s) – not common.

Sigalion mathildae Audouin & Milne Edwards, 1832
(fig. 1.18.r–u)

Sigalion Mathildae Audouin & Milne Edwards, 1832: 441; Fauvel, 1923: 103, fig. 39 a–l.

Body up to 150 mm. long with 200 segments. Prostomium oblong, rounded anteriorly; four small eyes in a rectangle; a pair of minute lateral antennae; two very long palps projecting from beneath the first setiger which is directed forwards and bears a long dorsal tentacular cirrus and a rudimentary ventral one. Jaws not denticulate at the base. Notopodium (fig. 1.18.r) bulbous with a single presetal stylode and three superior ctenidia; notopodial capillaries numerous and finely

spinulose; neuropodium shorter, faintly bilobed with a superior stylode. Ventral cirrus slender. Neurosetae variable but include five forms; (a) four to five superior simple bipennate setae, (b) two to three compound setae (fig. 1.18.u) with spinous shafts and pluriarticulate bidentate blades, (c) several similar setae with smooth shafts, (d) several bidentate falcigers (fig. 1.18.t) with smooth shafts and simple blades, (e) several falcigers with bidentate tips borne on pluriarticulate tapered blades. Elytra (fig. 1.18.s) quadrilateral, thin and smooth, each bearing about 15 bipennate projections laterally (s^1); a cirriform branchia on all elytrophores or cirrophores from the 5th foot.

Type locality: Atlantic coast of France.

Records: Madagascar (i) – isolated specimens.

Distribution: N. Atlantic (Scotland to Morocco (i, s); Mediterranean; tropical Indian Ocean (i, s); N.W. Japan.

Sigalion squamatum Delle Chiaje, 1841
(fig. 1.19.a–f)

Sigalion squamatum Delle Chiaje, 1841: 96; Fauvel, 1923: 104, fig. 39 m–o; Day, 1960: 290.

Body large, up to 300 mm. long with more than 200 segments. Prostomium (fig. 1.19.a) oval, longer than broad. Anterior and posterior pairs of eyes well separated. Antennae reduced to small cylindrical papillae. Dorsal and ventral tentacular cirri (on setiger 1) subequal; no dorsal cirri on subsequent feet. Elytra (fig. 1.19.c) rectangular with about 15 bipennate papillae on the external margin, each papilla (c^1) having 7–10 pairs of lanceolate branches. The first small cirriform gill appears on setiger 3 and gills are fully developed on both medial and lateral sides of the elytrophore from setiger 6. Notopodia (fig. 1.19.b) swollen distally with three ciliated cushions (ctenidia) on the superior margin, a presetal papilla (stylode) at its end and a patch of conical tubercles on the anterior face. Neuropodia obliquely truncate with a conical acicular lobe separating superior and inferior groups of setae, a rudimentary superior presetal lip and bilobed postsetal lip but no apical stylode. Ventral cirrus slender. Notosetae long and hair-like, minutely serrate on the convex margin and terminally bidentate (fig. 1.10.d). Neurosetae include a superior group of about six simple bipectinate setae (a) and three types of compound setae, (b) a group with serrated shaft-heads and pluriarticulate blades, (c) about six with finely serrated shaft-heads and simple bidentate blades (fig. 1.19.e), (d) a very numerous fine inferior group with faintly serrate shaft-heads and very long, pluriarticulate blades (fig. 1.19.f). All compound setae have bidentate tips (if not broken).

Type locality: Naples.

Records: Cape (34/18/s) – a few specimens.

Distribution: Mediterranean (s); Scotland (s).

PSAMMOLYCE Kinberg, 1855

Body vermiform. Prostomium with a median antenna borne on a ceratophore without ctenidial flaps and two lateral antennae often fused to the first setiger. Tentacular segment with two bundles of simple capillaries. Parapodia with ctenidia. Dorsal cirrus only on the third setiger. Cirriform branchiae on all except a few anterior feet. Notosetae as spinulose capillaries neurosetae compound and falcigerous. Elytra coated with sand.

Type species: *Psammolyce flava* Kinberg, 1855.

Key to Species

1 Papillae on elytra jointed (fig. 1.19.i[1]). Ventral surface with subspherical tubercles ***P. articulata***

– Papillae on elytra not jointed. Ventral surface with elongate papillae. . . ***P. petersi***

Psammolyce articulata Day, 1960
(fig. 1.19.g–l)

Psammolyce articulata Day, 1960: 293, fig. 4 g–l.

Body (fig. 1.19.g) about 50 mm. long for 100 segments and rather flattened. Ventral surface covered with minute subspherical tubercles. Prostomium (fig. 1.19.h) with lateral antennae small and not fused to the tentacular segment. Anterior pair of eyes ventral below the antennae; second pair dorsal. First pair of elytra pear-shaped without projections or incisions, second pair reniform, succeeding ones (fig. 1.19.i) with antero-medial lobes and posterior lappets (i[1]), posterior ones triangular with posterior lappets. All elytra except the first bear long *jointed* papillae. Dorsal cirrus on setiger 3 large but not much longer than the neuropodium. Notosetae (fig. 1.19.k) fine with well marked serrations. Notopodium with elongate papillae. Neurosetae (fig. 1.19.l) with serrated shaft-heads and simple bidentate blades. Neuropodium (fig. 1.19.j) with rows of digitiform papillae near the apex. Ventral cirrus accompanied by two to three long hair-like papillae. Ventrum and bases of the parapodia covered with spherical papillae.

Type locality: False Bay, South Africa.

Records: Cape (34/18/s) – one specimen.

Psammolyce petersi Kinberg, 1858

Psammolyce petersi Kinberg, 1858: 31, pl. 9, fig. 43.

Body 65 mm. long with more than 70 segments. Prostomium broad posteriorly with all four eyes visible, the posterior pair being the larger and wider apart. Median antenna slender and borne on a large conical cirrophore which is longer than the prostomium. Pharynx with 9 + 9 marginal papillae. Notopodium small with a

FIG. 1.19. *Sigalion squamatum*. (A) Head. (B) Foot. (C, C[1]) Elytron and details of marginal papilla. (D) Tip of notoseta highly magnified. (E) Neuroseta with simple bidentate blade. (F) Neuroseta with pluriarticulate blade. *Psammolyce articulata*. (G) Entire worm (half natural size). (H) Head. (I, I[1]) Eighth elytron and details of posterior margin. (J) Foot. (K) Notoseta. (L) Neuroseta. *Thalenessa oculata*. (M) Entire worm (half natural size). (N, N[1]) Elytron and details of marginal papilla. (O) Head. (P) Neuroseta. (Q) Foot.

tuft of very fine serrulate setae. Neuropodium longer and bearing compound setae with smooth shafts and bidentate apices. Lower surface of foot with numerous slender papillae. Elytra do not cover the middle of back which is sandy. First pair of elytra with anterior and inner margins straight; later ones reniform; all elytra sandy with adhesive papillae and hemispherical tubercles bearing long fringes.

Type locality : Mocambique Is.

Distribution : Mocambique Is. (i) – a single record.

THALENESSA Baird, 1868

Body elongated, tapered and somewhat flattened. Segments very numerous. Prostomium fused to the forwardly produced tentacular segment and bears two pairs of eyes and three antennae. Laterals arise either from the prostomial margin or the base of the tentacular segment. Median antenna without a ceratophore or basal lappets. Two pairs of tentacular cirri with one bundle of simple setae at the base. A prebuccal flange. Palps separated by a basal sheath from the tentacular segment. A dorsal cirrus on setiger 3 only. Elytra on setigers 2, 4, 5, 7 and alternate segments to about the 27th then on all succeeding segments. Dorsal cirriform branchiae on all segments from about the 5th. Notopodia with three dorsal ctenidial ridges. Notopodia and neuropodia with bract-like lamellae bearing digitiform stylodes. Notosetae are spinulose capillaries; neurosetae compound and falcigerous with simple or pluriarticulate blades. No simple neurosetae.

Type species : *Sigalion edwardsi* Kinberg, 1855.

Key to Species

1 Tentacular segment well developed with the tentacular cirri terminal . . ***T. dendrolepis****
– Tentacular segment reduced to a prebuccal flange with fine setae and tentacular cirri attached to the base of the palp (fig. 1.19.o) . . . . . ***T. oculata***

Thalenessa oculata (Peters, 1854)
(fig. 1.19.m–q)

Sigalion oculatum Peters, 1854: 610.
Euthalenessa insignis Ehlers, 1908: 52, pl. 1 figs. 10–11.

Body (fig. 1.19.m) up to 200 mm. long with more than 200 segments. Colour white with brown marks on elytra, a band across dorsum of setiger 12 and a fainter one on setiger 13. Prostomium (fig. 1.19.o) broader than long with a median ridge. Anterior pair of eyes well separated from posterior pair and slightly larger. Antennae short and subequal; all arise from the base of the tentacular segment immediately in front of the prostomium, the laterals slightly in front of the median. Setae of tentacular segment few, fine and arise from the groove formed by the prebuccal flange. Palps very long and slender. Dorsal tentacular cirrus shorter than the ventral. Dorsal cirrus on setiger 3 short. Elytra on alternate segments to setiger 27 and then on all segments. First two elytra rounded and without marginal papillae;

later ones (fig. 1.19.n) fringed, and reniform. There are about 15–20 multifid papillae on the external margin, each papilla (n^1) having about eight filaments.

Cirriform branchiae on all segments from the 4th. Three ciliated ctenidial ridges on all notopodia. Notopodium (fig. 1.19.q) with presetal and postsetal lamellae anteriorly bearing three to four stylodes each, later only one. Neuropodium stout with a blunt apex, projecting aciculum and two to three lamellae each of which has about three stylodes anteriorly but later only one or none. Notosetae numerous, fine and all well serrated. Neurosetae (fig. 1.19.p) all compound and falcigerous. The first few feet have setae with pluriarticulate blades but these decrease and most neurosetae in the middle of the body have simple blades. Shaft-heads faintly serrated. Ventral cirrus well developed reaching the base of the neurosetae. Ventrum smooth.

Type locality: Mocambique.

Records: Cape (from 33/17/s and 33/18/i, s to 33/28/s); Natal (29/31/s); Mocambique (23/35/s).

Distribution: ? Endemic.

STHENELAIS Kinberg, 1855

Body vermiform. Prostomium rounded; median antenna mounted on a ceratophore with basal lappets. Lateral antennae more or less fused to first setiger. Tentacular segment with two bundles of capillary setae. No dorsal cirrus on setiger 3. Dorsal ctenidia and cirriform branchiae present. Notosetae as spinulose capillaries. Neurosetae mainly compound and falcigerous but often include a few simple spinulose capillaries.

Type species: *Sthenelais helenae* Kinberg, 1855.

Key to Species

1 Ventral surface smooth; a few simple serrate setae in the superior part of the neuropodium 2
– Ventral surface papillose; no simple serrate setae in the superior part of the neuropodium . . . . . *S. papillosa*
2 Outer edges of all elytra with simple digitiform papillae . . . . . *S. boa*
– Outer edges of anterior elytra with irregular processes, posterior elytra with an excision *S. limicola*

Sthenelais papillosa Day, 1960
(fig. 1.20.a–e)

Sthenelais papillosa Day, 1960: 289, fig. 3 e–j.

Body about 40 mm. long with numerous segments; colour pale with speckled elytra. Prostomium (fig. 1.20.a) rounded with a median antenna 1·5 times the prostomial length. Basal lappets of median antenna rather small. Setiger 1 with a long dorsal tentacular cirrus, a shorter ventral cirrus and a presetal bract. Elytra

(fig. 1.20.b) pale and reniform with minute unicellular marginal papillae, and tiny cushion-like papillae on the surface. Notopodium (fig. 1.20.c) with six short stylodes. Neuropodium with two to three apical stylodes and a low presetal lip edged with about eight elongate papillae. The ventral surface of the neuropodium bears numerous spherical papillae spreading from the ventral surface of the body. Notosetae (fig. 1.20.d) are numerous capillaries each with a finely serrated margin. Neurosetae lack superior serrate simple setae and the numerous compound falcigers (fig. 1.20.e) have lightly serrated shaft-heads and long simple blades sometimes with two to three weak joints. None with long pluriarticulate blades.

Type locality: False Bay, South Africa.

Records: Cape (34/18/s).

Distribution: A single record.

Sthenelais boa (Johnston, 1839)
(fig. 1.20.f–l)

Sigalion Boa Johnston, 1839: 439.
Sthenelais boa: Fauvel, 1923: 110, fig. 41 a–l; Fauvel, 1953: 61, fig. 28 a–k.

Body up to 200 mm. long with 200 segments. Colour grey. Prostomium (fig. 1.20.g) rounded; a long smooth median antenna with large basal lappets on the very stout ceratophore. Setiger 1 with a long dorsal cirrus, a shorter ventral cirrus and a presetal bract. Setiger 3 with a cirrophore but no dorsal cirrus. Notopodia (fig. 1.20.i) with three ctenidia at base and three to four digitiform papillae at apex. Notosetae long, fine and spinulose. Neuropodium conical with an apical papilla and three lamellae, one superior, one inferior (papillose) and one posterior and bilobed. Neurosetae of several kinds: (a) two to three superior, simple bipectinate setae (fig. 1.20.j), (b) numerous compound setae with blades short and bidentate (fig. 1.20.k), (c) an inferior series of compound setae with multiarticulate blades ending in bidentate tips (fig. 1.20.l). Elytra reniform and overlapping, with a simple external fringe of long papillae; surface covered with minute rounded tubercles and usually with an arc of brown pigment on the postero-medial margin.

Type locality: English Channel.

Records: South West Africa (26/15/i and 28/16/s) around the Cape (34/18/i, s) to Natal (29/31/i); Mocambique (26/32/i); Madagascar (s) – fairly common in sand among stones.

Distribution: Atlantic from Scotland (i, s), the English Channel (i, s) and North Carolina (s) south to Senegal (s); Mediterranean; Persian Gulf (s).

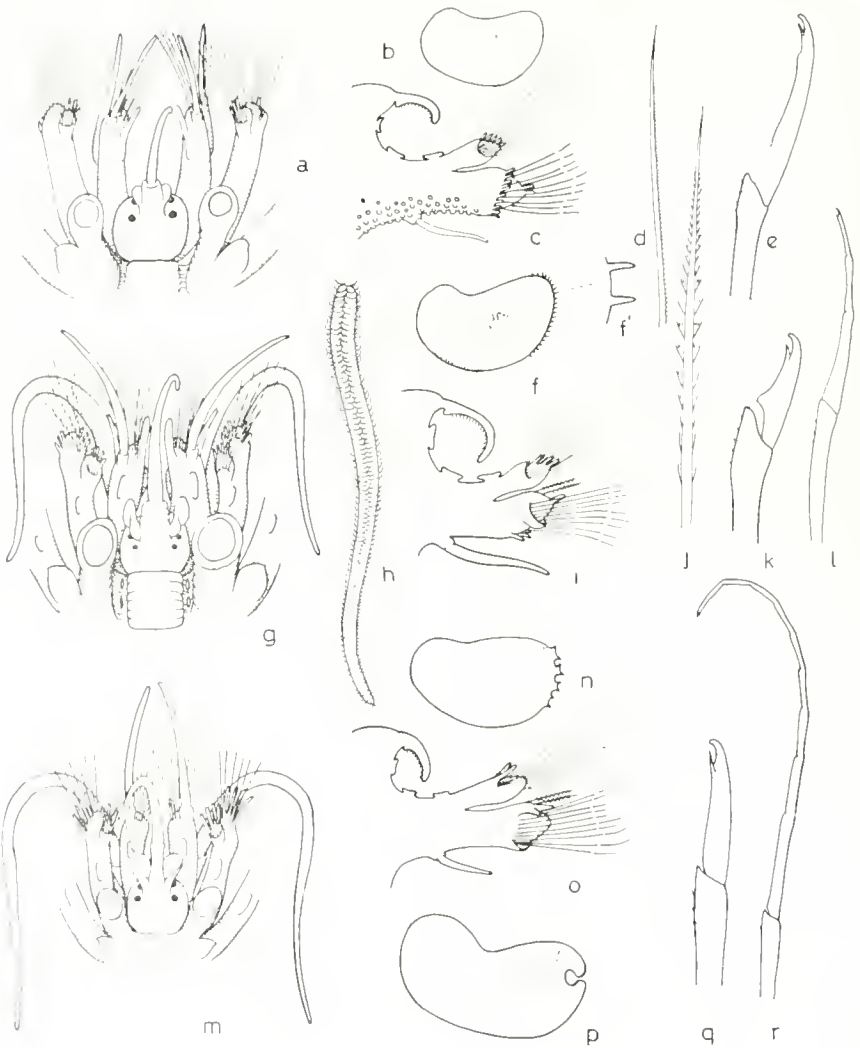

FIG. 1.20. *Sthenelais papillosa*. (A) Head. (B) Elytron. (C) Parapodium with gill shown by transparency. (D) Tip of notoseta. (E) Neuroseta. *Sthenelais boa*. (F) Elytron with gill attached below. (G) Head. (H) Entire worm (natural size). (I) Parapodium. (J) Superior bipectinate neuroseta. (K) Compound neuroseta with a simple blade. (L) Compound neuroseta with a multiarticulate blade. *Sthenelais limicola*. (M) Head. (N) Anterior elytron. (O) Parapodium. (P) Posterior elytron. (Q) Neuroseta with a simple blade. (R) Neuroseta with a multiarticulate blade.

Sthenelais limicola (Ehlers, 1864)
(fig. 1.20.m–r)

Sigalion limicola Ehlers, 1864: 120, pl. 4 figs. 4, 7, pl.5.
Sthenelais limicola: Fauvel, 1923: 113, fig. 42 a–g.

Body up to 80 mm. long with numerous segments. Colour pale with diffuse brownish patches on the elytra. Prostomium (fig. 1.20.m) rounded with four eyes and a median antenna arising from a long ceratophore with large basal lappets. Setiger 1 with a long dorsal tentacular cirrus, a small filiform ventral cirrus and a very large presetal bract. Palps very long and slender. Setigers 2–4 bear numerous cirriform stylodes on both rami but these are reduced on subsequent feet. The 4th and subsequent feet (fig. 1.20.o) bears a cirriform gill and three saucer-shaped ctenidia. Notopodia with three to four digitiform stylodes. Notosetae are numerous finely spinulose capillaries. Neuropodia stout, each with a superior lobe, a single apical stylode and a posterior bract. Neurosetae of three kinds: (a) two to three bipectinate simple setae; (b) a few falcigerous setae with simple bidentate blades (fig. 1.20.q); (c) numerous compound setae with long pluriarticulate blades (fig. 1.20.r). Elytra overlap and cover the whole back; the first 11 (fig. 1.20.n) have a few pointed marginal projections but each of the posterior ones (fig. 1.20.p) has a deep excision on the external margin and lacks marginal projections.

Type locality: Italy.

Records: Cape (30/15/d, 34/18/s, 34/21/s, 34/23/s) – fairly common.

Distribution: North Atlantic (Sweden (d), Scotland (s) and North Carolina (s) to Morocco (s) and tropical western Africa Brazzaville Congo; Mediterranean.

LEANIRA Kinberg, 1855
(Characters emended by Hartman, 1965)

Body vermiform. Prostomium rounded, with or without eyes. Median antenna on a ceratophore without basal lappets. Lateral antennae often fused to the tentacular segment. Tentacular segment with one bundle of setae. A dorsal cirrus sometimes present on setiger 3. Cirriform branchiae arise from the elytrophores on all except a few anterior feet. Elytra on alternate segments anteriorly but on every segment after the 25th. Notosetae as smooth or spinulose capillaries. Neurosetae mainly compound and spinigerous, with the blades appearing barred and sometimes a few superior simple serrated setae as well.

Type species: *Leanira quatrefagesi* Kinberg, 1855.

Leanira hystricis Ehlers, 1874
(fig. 1.21.a–d)

Leanira hystricis Ehlers, 1874: 35, pl. 2 figs. 5–11; Fauvel, 1923: 118, fig. 43 h–m; Day, 1963: 360.

Body about 40 mm. long with 50–60 setigers. Prostomium (fig. 1.21.a) rounded. No eyes. Median antenna short, three-jointed but lacks basal lappets. Lateral antennae similar to the median but fused basally to the tentacular segment which bears a few fine setae, a long tentacular cirrus, a small ventral one and a large prebuccal flange which ensheaths the bases of the very long palps. No dorsal cirrus on setiger 3. Notopodia with three to four stylodes on the setigers 2 and 3 but only one large sausage-shaped one thereafter (fig. 1.21.c). Neuropodia with a similar arrangement of stylodes. Notosetae as fine spinulose capillaries. Neurosetae compound with smooth shafts and blades with rectangular internal structures which give a laddered effect (fig. 1.21.d). No superior simple serrated neurosetae. A cirriform gill on all setigers from the 24th–30th onwards. Elytra (fig. 1.21.b) small, rounded, smooth and transparent; they lack fringes and leave the middle of the back bare.

Type locality: Deep Atlantic, S.W. Ireland.

Records: Cape (33/16/a (a = abyssal), 33/17/vd, 34/16/a, 34/17/a) and Natal (29/31/d) – a few specimens only.

Distribution: N. Atlantic from W. Scotland (a) and W. Ireland (vd) to Azores (a).

STHENOLEPIS Willey, 1905

Generally similar to *Leanira* (see above) but a pair of basal lappets present on the ceratophore.

Type species: *Leanira japonica* McIntosh, 1885.

Key to species

1	Margins of all elytra quite smooth	**S. japonica**
–	Margins of elytra either notched or with papillae	2
2	Elytra with a few marginal papillae. No superior simple neurosetae	**S. tetragona**
–	Elytra with a notch on the external margin. A few superior simple neurosetae	**S. incisa**

Sthenolepis japonica (McIntosh, 1885)

Leanira japonica McIntosh, 1885: 154, pl. 22 fig. 8, pl. 24A figs. 1–2; Fauvel, 1953: 69, fig. 33 a–b.
Sthenolepis japonica: Izuka, 1912: 88, pl. 10 figs. 3–7.

Body up to 50 mm. long with 100 segments. Colour pale in alcohol. Prostomium rounded with a long tapered median antena mounted on a ceratophore with well developed basal lappets. Lateral antennae fused to the base of the tentacular segment. Palps long and tapered. Two pairs of eyes, of which the anterior pair are the larger and are situated far forward below the base of the median antenna. No dorsal cirrus on setiger 3. Elytra on setigers 2, 4, 5, 7 and alternate segments

anteriorly and on all segments from setiger 27 onwards. Individual elytra oval to reniform, translucent with smooth surfaces and plain margins without papillae or notches. Cirriform gills on all setigers from the 5th onwards; they arise from the elytrophores or their homologues on non-elytrigerous segments. Dorsal surface of notopodium with three saucer-like ctenidia. Anterior feet with three stylodes on the notopodia and five on the neuropodia; posterior feet with only one to two on the neuropodia. Notosetae are capillaries, some plain and others with serrated blades. Neurosetae may include one to two simple serrated superior setae on some feet but most of the setae in all feet are compound and spinigerous with longer or shorter "laddered" blades. Ventral cirrus single. Ventrum smooth.

TYPE LOCALITY: Kobe, Japan.

RECORDS: Mocambique (24/35/d).

DISTRIBUTION: Tropical Indo-west -Pacific from Japan (s), Indian Ocean (d, vd) to Gulf of Oman.

Sthenolepis incisa (Grube, 1877)

Sthenelais incisa Grube, 1877: 519.
Sthenelais simplex Ehlers, 1887: 60, pl. 13 figs. 2–3; pl. 14 figs. 1–6.
Leanira incisa: Augener, 1918: 107.

Body up to 100 mm. long. Prostomium rounded, without eyes. Median antenna short and two-jointed with minute lappets on the cirrophore. Lateral antennae as long as the median and fused to the first setiger. Elytra smooth, without marginal papillae but with a notch on the external margin. Notopodium with several tapered stylodes. Neuropodium with a presetal lip and about nine tapered stylodes. Notosetae capillary and include both smooth and serrated forms. Neurosetae of two types: (a) two to three simple superior setae with bipectinate blades; (b) numerous compound spinigerous setae with smooth shaft-heads and tapering blades bearing two rows of rectangular structures which give a laddered effect when viewed by transparency.

TYPE LOCALITY: Dredged off Congo coast.

RECORDS: Not recorded from southern Africa.

DISTRIBUTION: Angola (s); Brazzaville, Congo (s).

Sthenolepis tetragona (Oersted, 1845)
(fig. 1.21.e–i)

Sigalion tetragonum Oersted, 1845: 404.
Leanira tetragona: Fauvel, 1923: 117, fig. 43 a–g; Day, 1963: 360.

Body up to 80 mm. long with 100 setigers. Prostomium (fig. 1.21.f) rounded, without eyes. Median antenna cylindrical, with a very long terminal joint, a short basal joint and a very short ceratophore with a pair of ctenidial flaps. Lateral antennae possibly fused to the tentacular segment which also bears a very long tentacular cirrus, a shorter ventral one and prebuccal flanges ensheathing the bases

of the long palps. A dorsal cirrus on setiger 3. Cirriform branchiae on all segments from the 5th or 6th. Elytra (fig. 1.21.e) with a few delicate papillae on the external margin. Notopodium (fig. 1.21.g) with three saucer-like ctenidia and five to seven slender stylodes. Neuropodium with a bluntly triangular presetal lobe and a series of 10–12 long slender stylodes at the origin of the setae. Notosetae (fig. 1.21.h) are fine spinulose capillaries. No simple serrated setae in the neuropodium; all are compound and spinigerous. The middle series are stout with smooth shaft-heads, but the superior and inferior ones (fig. 1.21.i) are slender with a single cusp in the shaft-head. Blades weakly ornamented internally, giving an obliquely laddered effect.

Type locality: Norway.

Records: Cape (33°17′a) – only two specimens.

Distribution: Northern Atlantic from Greenland (d, a) and Sweden (d, vd) to Scotland (d); Mediterranean (vd).

Fig. 1.21. *Leanira hystricis*. (a) Head. (b) Elytron. (c) Foot. (d) Neuroseta. *Sthenolepis tetragona*. (e) Elytron. (f) Head. (g) Foot. (h) Notoseta. (i) Neuroseta.

Family **PALMYRIDAE** Kinberg, 1858
(= CHRYSOPETALIDAE Ehlers, 1864)

Small elongated and rather flattened worms, rectangular in section and somewhat brittle. Dorsal surface covered with paleae. Prostomium sunken between the anterior segments; it is rounded with one to two pairs of eyes, one to three short anntennae, a pair of small ventral palps and may have an anterior facial tubercle or a posterior caruncle. Peristomial segment reduced; it lacks neurosetae but bears notosetae and one to two pairs of tentacular cirri. Parapodia biramous; notopodium with a dorsal cirrus and a transverse row of notosetae usually expanded to form paleae which cover the dorsum. Neuropodium with a ventral cirrus, and a compact setigerous lobe with compound, usually falcigerous setae.

Records from southern Africa

Bhawania goodei Webster . .	26As, 36Ci, 50Cs, 53Mi
as *Bhawania cryptocephala* Gravier .	27Mi, 35Ci, 40Ni
Paleanotus chrysolepis Schmarda .	4Ci, 21Ci, 26Ws, 45Ni, 50Cs
Paleanotus debilis (Grube) . .	
as *Chrysopetalum debile* Gravier .	45Pi

BIOLOGICAL NOTES

The palmyrids are minute worms and not often seen. Their feeding habits are unknown. *Bhawania* is found in crevices of rocks or coral while *Paleanotus* is occasionally found in kelp holdfasts or in bryozoan tufts below tide marks. *P. heteroseta* the American species lives on the surface of shelly sandbanks.

THE MAIN DIAGNOSTIC CHARACTERS

The most important characters are the structures on the head and the nature of the paleae. The head is small, its appendages minute and usually covered by paleae. In *Bhawania* the whole prostomium is sunk back and covered by a fold of skin as well as paleae, but in *Paleanotus* it is clearly visible when the paleae are pushed aside. A facial tubercle projecting from the anterior margin of the prostomium has been described by Hartman (1954) in *Palmyra* and a caruncle is present in some species of *Paleanotus* if not in all. Usually there are two pairs of eyes but these may be lacking; antennae may similarly be reduced from three to one. Palps may be well developed or reduced to mere papillae. The number of tentacular cirri is not always clear as they are not much larger than the dorsal and ventral cirri of succeeding segments. The dorsal and ventral cirri of the first or peristomial segment form two pairs of tentacular cirri but the dorsal cirrus of the second segment may also be elongated giving three pairs and sometimes the ventral cirrus too giving four pairs. Since the differences in size between tentacular cirri and normal cirri are not great the number of "tentacular" cirri does not appear to be a reliable character.

The notosetae arise from a dorsal boss or ridge and most of them are usually expanded to form a transverse row of paleae; however, the extreme lateral ones near the dorsal cirrus are poorly developed and usually pointed. These have been

reported as a second type of notoseta. The ornamentation of the paleae is constant and provides good specific characters.

The neurosetae are all compound but the blades vary in length and degree of taper – short falcigers, long falcigers and even spinigers have been reported. Since the superior neurosetae always have longer blades than the inferior ones only well marked differences are important.

Key to Genera

1 A single median antenna. A large facial tubercle in front of the prostomium ***PALMYRA****
– Three antennae. No facial tubercle 2
2 Body short. Head visible between the paleae 3
– Body long. Head completely concealed under a dorsal fold of skin bearing paleae ***BHAWANIA***
3 Notosetae few and not markedly flattened. One pair of eyes or none . . ***DYSPONETUS****
– Notosetae numerous and obviously flattened to form paleae covering most of the dorsum. Two pairs of eyes 4
4 Alternate ribs of paleae ornamented with discs . . . . . ***HETEROPALE****
– Blunt cusps or knobs on ribs of paleae . . . . . ***PALEANOTUS***

PALEANOTUS Schmarda, 1861
(including *CHRYSOPETALUM* Ehlers, 1864)

Body short with relatively few segments. Head visible between the paleae. Prostomium with a pair of cirriform ventral palps, two pairs of eyes and three antennae. A caruncle or nuchal fold may be present behind the prostomium. The peristomial segment and the next are fused and pressed close against the sides of the prostomium; both lack neurosetae but have paleae and dorsal and ventral cirri, those of the peristomial segment being elongated to form tentacular cirri. Normal segments biramous, the notopodium having a dorsal cirrus and a stout boss from which the broad flattened paleae radiate over the dorsum. Neuropodium with a ventral cirrus and a setigerous lobe bearing a tuft of falcigerous or spinigerous neurosetae.

Type species: *P. chrysolepis* Schmarda, 1861.

Key to Species

1 Paleae with 16–20 ribs . . . . . ***P. chrysolepis***
– Paleae with 6–10 ribs . . . . . ***P. debilis***

Paleanotus chrysolepis Schmarda, 1861
(fig. 2.1.l–m)

Paleanotus chrysolepis Schmarda, 1861: 163, pl. 37 figs. 326–329; Day, 1957: 66.

Body 12 to 15 mm. long with about 40 segments. Prostomium with a pair of lateral antennae extending forward and a shorter median antenna arising between the two pairs of eyes. Caruncle doubtful. Palps stout. Paleae not covering the centre of the dorsum. Paleae nearest the mid-dorsal line are symmetrical but the rest

(fig. 2.1.l) are asymmetrical with the apex nearer the inner margin. Each has 16–20 ribs of equal size; the rib on the outer margin is coarsely beaded but the others are finely beaded with minute transverse striae between them. The outermost paleae next the dorsal cirrus are slender and imperfectly formed. Neurosetae (fig. 2.1.m) have blades of varying length but all are unidentate and falcigerous.

Type locality: "Cape of Good Hope".

Records: From South West Africa (26/15/s) around the Cape (33/18/i and 34/18/s) to Natal (29/31/i) and Madagascar (s) – a few specimens on rocks at extreme low tide or below.

Distribution: Chile (24°S–i); California (s) to Alaska; S.W. Australia.

Paleanotus debilis (Grube, 1855)
(fig. 2.1.g–k)

Palmyra debilis Grube, 1855: 90.
Chrysopetalum debile: Fauvel, 1923: 123, fig. 44 r–u.
Chrysopetalum ehlersi Gravier, 1901: 260, pl. 10 figs. 150–151, text-fig. 276.
Palaenotus debilis: Day, 1962: 635 (synonymy).

Body (fig. 2.1.g) about 10 mm. long with 40 segments. Prostomium (fig. 2.1.h) oval with four distinct eyes, a tapered median antenna and a longer annulated pair of laterals extending forwards. Palps stout. Peristomial segment with very few paleae and two pairs of tentacular cirri. Next segment fused to the peristome but dorsal and ventral cirri not elongated. A raised nuchal fold or "caruncle" is present behind the prostomium. Paleae just meet over the mid-dorsal line. The central palea of each row (fig. 2.1.i) is symmetrical but the rest are asymmetrical with their apices inclined towards the central one. Each palea (fig. 2.1.j) has about six to eight narrow inner ribs which are very faintly beaded or almost smooth and two stout outer ones which are coarsely beaded or cusped. Neurosetae (fig. 2.1.k) falcigerous with unidentate blades of even length.

Type locality: Mediterranean Sea.

Records: Mocambique (26/32/i, 24/35/d) – rare.

Distribution: N. Atlantic (France to Morocco); Mediterranean (s); Red Sea (i); tropical Indian Ocean (i).

BHAWANIA Schmarda, 1861

Body elongate with very numerous segments completely covered by golden brown paleae. Head small and hidden by a fold bearing the paleae of anterior segments between which the head is embedded. Prostomium with two pairs of eyes, three antennae and a pair of palps. First setiger (or tentacular segment) with notosetae, neurosetae and dorsal and ventral cirri. Paleae arranged in transverse rows which completely cover the dorsum. Dorsal cirri retractile into stout cirrophores anterior

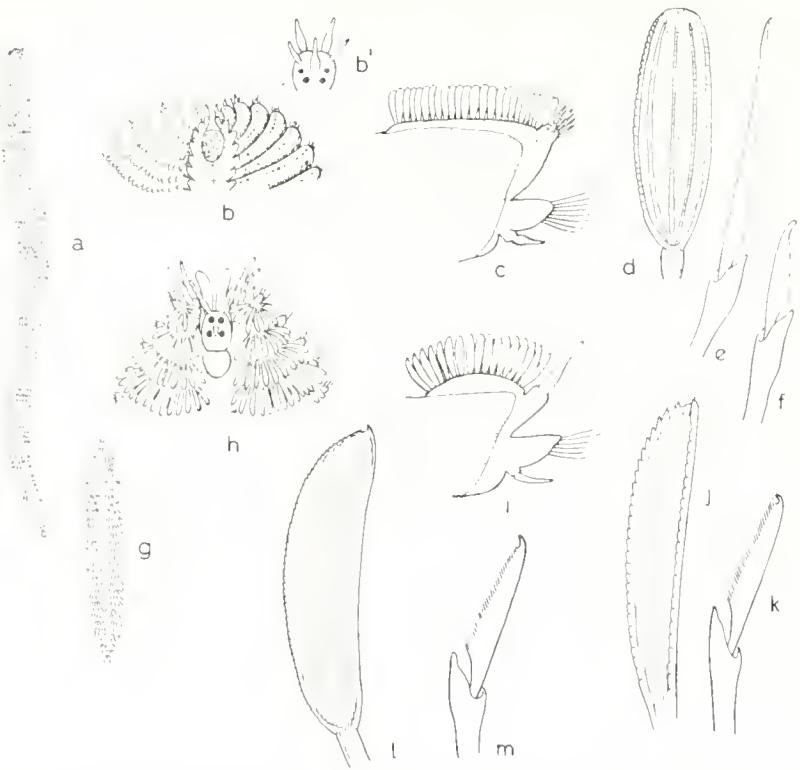

Fig. 2.1. *Bhawania goodei*. (A) Entire worm (twice natural size). (B, B¹) Head with the dorsum slit and paleae removed from right side. (C) Foot. (D) Palea. (E, F) Superior and inferior neurosetae. *Paleanotus debilis*. (G) Entire worm (twice natural size). (H) Head. (I) Foot. (J) Palea. (K) Neuroseta. *Paleanotus chrysolepis*. (L) Palea. (M) Neuroseta.

to which is a tuft of small, rudimentary paleae. Neuropodium with a ventral cirrus and a setigerous lobe bearing a fan of compound setae with blades of varying length. The tips are indistinct superiorly but obviously falcigerous inferiorly.

Type species: *Bhawania myrialepis* Schmarda, 1861.

Bhawania goodei Webster, 1884
(fig. 2.1.a–f)

Bhawania goodei Webster, 1884: 308; Day, 1953: 407.
Bhawania cryptocephala Gravier, 1901; 263, pl. 10 figs. 152–156.

Body (fig. 2.1.a) elongate, depressed, square in section and brittle. Length up to 50 mm. with over 300 segments and completely covered with golden brown paleae. Prostomium (fig. 2.1.b) small, rounded and retractile, normally concealed in a

pocket above the mouth. Four eyes, three antennae and a pair of palps. Carunele not distinguished. First setigerous or tentacular segment small but with notosetae (paleae), neurosetae and dorsal and ventral cirri. Body segments with notopodia (fig. 2.1.e) as ridges extending almost to the mid-dorsal line and bearing rows of about 30 large paleae and a few small rudimentary ones in front of the dorsal cirrophore. Dorsal cirrus small and normally retracted into the cavity of the cirrophore. Neuropodium an obliquely truncate lobe with a well developed ventral cirrus on a short cirrophore. Paleae (fig. 2.1.d) petaloid with rounded tips,* about 20 longitudinal ridges and fine transverse striae. The lateral and three central ridges are much stronger than the rest and bear a series of low rounded knobs or beads. Rudimentary external paleae relatively slender but essentially similar in structure. Most neurosetae (fig. 2.1.f) are heterogomph falcigers but the superior ones (fig. 2.1.e) have long, effectively spinigerous blades.

Type locality: West Indies.

Records: Cape (from 34/18/i, s to 32/28/i); Natal (30/30/i, 29/31/i); Mocambique (26/32/i, 24/34/s); Madagascar (i).

Distribution: Red Sea (i); Indo-Pacific to Japan (i); Tahiti (i); tropical West Africa (i); Morocco (s); West Indies and North Carolina (s).

Family **SPINTHERIDAE** Augener, 1913

Body oval, convex dorsally and flattened ventrally. Found on sponges. Notopodia forming long radiating ridges on the dorsum with delicate lamellae supported by spinelike notosetae. No branchiae. Neuropodia cylindrical bearing one or more stout compound hooks. Prostomium dorsal, inconspicuous with a globular antenna and usually two pairs of eyes. Mouth ventral with an unarmed eversible proboscis.

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*_B. cryptocephala_ Gravier differs only in having paleae with an apical point.

Family **AMPHINOMIDAE** Savigny, 1818

Body stout with relatively few segments and often square in section. Prostomium usually sunk between the anterior segments and consists of anterior and posterior lobes. The anterior lobe is rounded dorsally, grooved ventrally and bears a pair of cirriform palps laterally and the first pair of eyes and two antennae dorsally; the posterior lobe is square with the third (median) antenna, the second pair of eyes and a posteriorly projecting lobe or caruncle which usually has a median keel and pleated sides. Pharynx unarmed. Parapodia biramous. Setae typically brittle and tubular containing poison. Notopodia with one or more dorsal cirri, branchiae and simple notosetae. Neuropodia with a single ventral cirrus, a setigerous lobe and usually simple neurosetae.

Records from southern Africa

Amphinome rostrata (Pallas)	32Np, 36Cp, 41Cp
Chloeia flava (Pallas)	
as *Chloeia natalensis* Day	36Ci, 40Ni, 41Ci
Chloeia fusca McIntosh	23Ni
as *Chloeia candida* (non Kinberg)	32Ns
Chloeia inermis Quatrefages	50Cd
as *Chloeia gilchristi* McIntosh	32Cd, 36Nd
Eyphrosine capensis Kinberg	3Ci, 10 Ci, 11 Wi, 12Ci, 13Ci, 32Cis, 33Ci, 35Ci, 50Cs
as *Euphrosine polybranchia* Schmarda	4Ci
Euphrosine myrtosa Savigny	21Ci, 45Pi, 50Cs
Eurythoe chilensis Kinberg	50 Cs
Eurythoe complanata (Pallas)	23Ni, 27Mi, 40Pi, 53Ni, Mi
as *Eurythoe assimilis* McIntosh	32Pi
as *Eurythoe capensis* Kinberg	?3Ci, 36Ni
Eurythoe parvecarunculata Horst	40Ni
? as *Amphinome incarunculata* Peters	1Pi
Hipponoa gaudichaudi agulhana Day	—Cp
Pherecardia striata (Kinberg)	45Pi
as *Pherecardia lobata* Horst	27Mi
as *Eucarunculata grubei* Mal. et Dehorne	32Ps
Pseudeurythoe microcephala Fauvel	—Nsd, Ps

BIOLOGICAL NOTES

Most of the amphinomids are sluggish carnivores feeding on soft-skinned attached animals such as sponges, hydroids and ascidians. They lack jaws but the cushion-like lips and the evaginable buccal cavity allows them to suck out the juices of their prey. *Hipponoa* indeed is almost parasitic on *Lepas* and its hooked neurosetae form efficient clinging organs. *Pherecardia*, on the other hand, is an active predator and has been

recorded as ingesting a *Marphysa* almost as large as itself in little more than an hour.

Amphinomids are popularly known as "fire worms" and have hollow calcareous setae filled with poisonous secretions. When irritated the worm erects its sharp setae which break off at a touch releasing their poisonous contents into the wound. *Eurythoe complanata* in particular is best collected with forceps. Most species occur in warm or tropical seas on rocks, coral or other hard substrata covered with attached organisms. *Amphinome* itself lives on driftwood; *Eurythoe* lives under stones or dead coral; *Euphrosine* lives on sponges and in crevices but *Chloeia* seems to be much more active. It swims well and is occasionally taken in trawl nets and from the stomachs of fish.

THE MAIN DIAGNOSTIC CHARACTERS

Useful discussions of the family will be found in Potts (1909) and Horst (1912). Generic distinctions are based on the nature and size of the caruncle, the structure of the gills, the number of dorsal cirri and, to a lesser extent, the setae.

The caruncle has two basic parts which may be variously developed; there is a median ridge or keel and lamellate lateral folds which may be very narrow so that only the keel is obvious or the lateral folds may be expanded so that the whole caruncle is very broad and the lamellae obvious. The caruncle is attached as far back as setiger 1 or 2 but the posterior end often projects freely over setiger 4. There may be one or more branching branchial trunks per notopodium. In *Chloeia* there is a single gill with a main axis and regular, bipinnate lateral branches; in other genera there may be one, two or several branchial trunks but the branching is irregular without an obvious main trunk; such gills are described as "bushy". There may be one or two dorsal cirri per notopodium. The setae are hollow and contain poison. The segmental development of the setae is variable so that only major differences are important. This is particularly true in the genus *Chloeia* where the development of a lateral fork and the serration of the harpoon-setae changes along the body.

Key to Genera

1 Neurosetae as retractile hooks (fig. 3.1.a–e). Caruncle absent. Branchiae bushy ***HIPPONOA*** (p. 122)

– Neurosetae stout and acicular. Caruncle small and heart-shaped (fig. 3.1.g). Branchiae bushy . . . . . ***AMPHINOME*** (p. 122)

– Neurosetae neither acicular nor retractile 2

2 Branchiae bipinnate each with a main axis and paired lateral branches (fig. 3.1.n). Neurosetae forked . . . . . ***CHLOEIA*** (p. 123)

– Branchiae bushy without a main axis. Neurosetae either forked or uniramous . . . 3

3 Branchiae limited to anterior segments 4

– Branchiae on all segments after the first two to four. No hooks on setiger 1 . . . 5

4 Two stout hooks in the first setiger . . . . . ***PARAMPHINOME****

– No stout hooks in the first setiger . . . . . ***PSEUDEURYTHOE*** (p. 124)

5 Caruncle elongated with the narrow lateral folds more or less concealed by the median ridge. Neurosetae forked 6

– Caruncle broad with well developed lamellate lateral folds. Neurosetae either forked or uniramous 7

6 Notosetae and branchiae in transverse rows across the dorsum (fig. 3.1.u). Body oval ***EUPHROSINE*** (p. 126)

– Notosetae and branchiae in compact lateral tufts. Body elongated and square in section ***EURYTHOE*** (p. 127)

7 Two dorsal cirri per notopodium. (Neurosetae forked) . ***NOTOPYGOS*** (p. 130)
– One dorsal cirrus per notopodium 8
8 Neurosetae with a spur at the base of the blade. Two branchial trunks . . ***HERMODICE****
– Neurosetae not spurred but tips bent. A single branchial trunk . ***PHERECARDIA*** (p. 131)

HIPPONOA Audouin & Milne Edwards, 1833

Body fusiform, somewhat flattened with 25–40 segments. Prostomium without a posterior caruncle. Three antennae and two digitiform palps. Four eyes. Mouth ventral. Parapodia biramous; notopodium with a tapered cirrus and a bundle of capillary setae; neuropodium reduced, and retractile with a papilliform ventral cirrus and a few hooked acicular setae. Branchiae bushy, one per notopodium.

Type species: *Hipponoa gaudichaudi gaudichaudi* Audouin & Milne Edwards, 1833.

Key to Species

1 Neuropodial hooks with the minor tooth straight. Notosetae include some with bifid tips
H. gaudichaudi gaudichaudi*
– Neuropodial hooks with the minor tooth curved. Notosetae all with straight tips
H. gaudichaudi agulhana

Hipponoa gaudichaudi agulhana **subsp. nov.**
(fig. 3.1.a–e)

Body (fig. 3.1.a) fusiform, depressed, about 17 mm. long for 28 segments. Prostomium (fig. 3.1.b) bluntly triangular with four well separated eyes in a rectangle. Median antenna longer than the anteriors and inserted well back behind the eyes. Palps similar to the anterior antennae but inserted ventro-laterally. Branchiae (fig. 3.1.c) bushy and inserted behind the notosetae from setiger 3 onwards. Dorsal cirri tapered and postero-ventral to the notosetae. Ventral cirri as papilliform swellings mediad to the neuropodial hooks. Notosetae (fig. 3.1.d) are bundles of tapered cylindrical capillaries throughout without a trace of serrations at the base and none have bifid tips. Neurosetae start on setiger 2; they are stout bidentate hooks (fig. 3.1.d), about eight per neuropodium and are retractile so that only the hooked ends are normally visible. The minor hook is curved in the same way as the stout terminal one. Animal found between the valves of *Lepas* attached to floating objects. Holotype: B.M. (N.H.) Reg. No. 1966. 26. 6.

Type locality: Agulhas Current off Port Elizabeth.

Records: Cape (34/25/p) – a single record.

AMPHINOME Bruguieres, 1789

Body elongate, often very large and pentagonal in section. Prostomium with a pair of lateral palps, two pairs of eyes, three antennae and a small cordate caruncle posteriorly. Branchiae bushy, one per notopodium. A single dorsal cirrus per notopodium. Notosetae include capillaries and harpoon-setae. Neurosetae few, stout, curved and acicular.

Type species: *Aphrodita rostrata* Pallas, 1766

Amphinome rostrata (Pallas, 1766)
(fig. 3.1.f–k)

Aphrodita rostrata Pallas, 1766: 106.
Amphinome pallasi Quatrefages: Fauvel, 1923: 127, fig. 46 a–g.

Body (fig. 3.1.f) up to 250 mm. long, dark grey, pentagonal in section. Prostomium (fig. 3.1.g) rounded dorsally and grooved ventrally with a pair of lateral palps, three dorsal antennae and two pairs of eyes. Caruncle small, smooth and cordate reaching setiger 2. Branchiae (fig, 3.1.h) as a tuft of branches from setiger 2 or 3 onwards. A single dorsal cirrus posterior to the notosetae. Notosetae include simple capillaries (fig. 3.1.i) and harpoon-setae with pointed tips and a row of recurved serrations (fig. 3.1.j). Neuropodium widely separated from the notopodium and very short and stout. A short ventral cirrus. Aciculum with a knobbed end. Neurosetae (fig. 3.1.k) few, stout, curved and acicular. Animal planktonic on driftwood.

Type locality: Tropical oceans.

Records: Fairly common on floating objects covered with *Lepas* in Agulhas Current from 34/24/p to 28/32/p.

Distribution: On driftwood in all warm and tropical seas.

CHLOEIA Savigny, 1818

Body depressed and oval with about 30 segments. Prostomium rounded anteriorly and grooved ventrally with a pair of lateral palps, two pairs of eyes and three antennae. Caruncle well developed and tapered with a median keel and pleated lateral folds. A single dorsal cirrus per notopodium. Branchiae from setiger 4 or 5, each consisting of a main axis with paired lateral (bipinnate) branches. Notosetae forked and serrated on the outer side of the longer prong; neurosetae usually smooth and forked. Both notosetae and neurosetae vary along the length of the body.

Type species: *Aphrodita flava* Pallas, 1766.

Key to Species

1 No colour pattern on the dorsum . . . . . ***C. inermis***
– A row of rounded spots along the mid-dorsal line . . . . . ***C. flava***
– Two narrow stripes along the dorsum . . . . . ***C. fusca***

Chloeia inermis Quatrefages, 1865
(fig. 3.1.l–q)

Chloeia inermis Quatrefages, 1865: 389; Monro, 1936: 80; Day, 1960: 295.

Body (fig. 3.1.l) up to 45 mm. long with 31 setigers. No colour markings on the dorsum. Median antenna (fig. 3.1.m) much longer than the laterals. Caruncle tapered with 15–20 lateral pleats. Dorsal and ventral cirri from the first foot. Branchiae (fig. 3.1.n) from setiger 4; they are bipinnate and the lateral branches

have secondary branches. Notosetae (fig. 3.1.o) mainly stout; neurosetae (fig. 3.1.q) slender; both have a very minute spur or step near the tip. No serrated (harpoon) setae in anterior notopodia but a few weakly serrated forms (fig. 3.1.p) in posterior feet.

Type locality: New Zealand.

Records: Cape (32/17/d, 33/17/d) – occasionally found in fish stomachs.

Distribution: New Zealand.

Chloeia flava (Pallas, 1766)
(fig. 3.1.r)

Aphrodita flava Pallas, 1766: 97, pl. 8 figs. 7–11.
Chloeia flava: Horst, 1912: 18, pl. 12 fig. 2; Fauvel, 1953: 96, fig. 46 a.

Body up to 70 mm. long and oval in plan. A row of rounded purple spots along the middle of the dorsum (fig. 3.1.r). Median antenna slightly longer than the laterals. Caruncle extending to setiger 4 with over 30 lateral pleats. Branchiae from setiger 4. Notosetae serrated, the anterior ones with a slight step at the base of the blade but not obviously forked. Neurosetae long, silky, and spurred but not serrated.

Type locality: Tropical Indian Ocean.

Records: Natal (29/31/i) – only a few specimens.

Distribution: Tropical Indo-Pacific (i).

Chloeia fusca McIntosh, 1885
(fig. 3.1.s)

Chloeia fusca McIntosh, 1885: 14, pl. 2 figs. 1–2, pl. 1A figs. 14–15, pl. 2A fig. 1–2; Horst, 1912: 22, pl. 7 fig. 7; Fauvel, 1953: 97, fig. 46 d.

Body brownish, about 20 mm. long with a pair of narrow purple stripes along the dorsum (fig. 3.1.s). Median antenna longer than the laterals. Caruncle extending to setiger 4 with 16 lateral lamellae. Branchiae from setiger 5. Anterior notosetae smooth and forked with the longer limb four times the length of the shorter plus a few fine setae with the main fork much longer. Posterior notosetae include serrated forms. Neurosetae are all forked and smooth.

Type locality: Mollucca Islands.

Records: Natal (29/31/i, s) – a single specimen.

Distribution: Tropical Indian Ocean (i, s).

PSEUDEURYTHOE Fauvel, 1932

Body elongated and square in cross section. Prostomium divided transversely with the anterior part bilobed and bearing a pair of antennae and a pair of palps; the posterior part square with two pairs of eyes and a median antenna. Caruncle small or absent, usually sunk into the first setiger. Parapodia with the notopodia

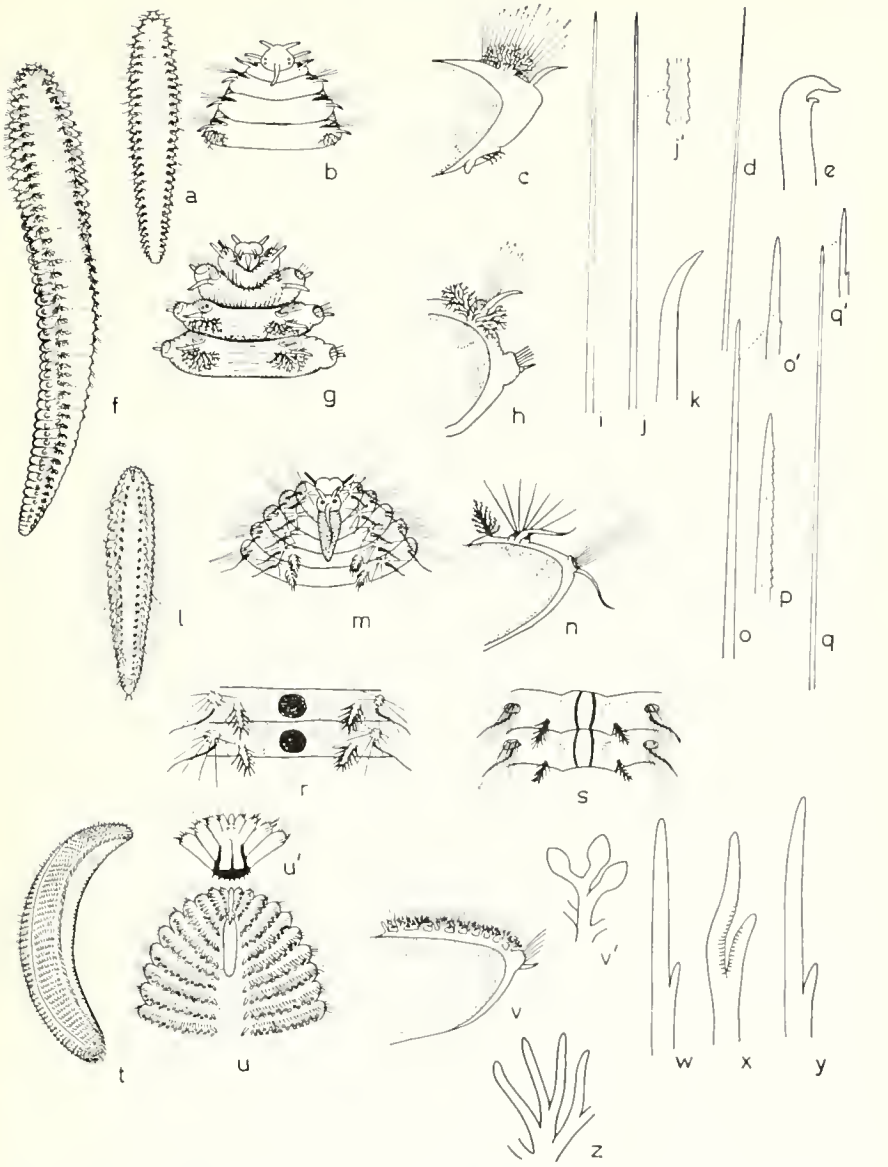

Fig. 3.1. *Hipponoa gaudichaudi agulhana.* (A) Entire worm (twice natural size). (B) Head. (C) Posterior view of foot. (D) Notoseta. (E) Neuropodial hook. *Amphinome rostrata.* (F) Entire worm (half natural size). (G) Head. (H) Posterior view of foot. (I) Notopodial capillary. (J) Harpoon seta. (K) Neuroseta. *Chloeia inermis.* (L) Entire worm (natural size). (M) Head. (N) Foot. (O) Notoseta. (P) Tip of harpoon seta. (Q) Neuroseta. *Chloeia flava.* (R) Dorsal view of two segments showing pigment pattern (after Horst). *Chloeia fusca.* (S) Dorsal view of two segments showing pigment pattern (after Horst). *Euphrosine capensis.* (T) Lateral view of entire worm (1·5 times natural size). (U) Head. (U^1) Ventral view of head. (V) Foot. (V^1) Enlarged view of tips of gill filaments. (W) Spurred notoseta. (X) Ringent notoseta. (Y) Neuroseta. *Euphrosine myrtosa.* (Z) Enlarged view of tips of gill filaments.

and neuropodia well separated. A single dorsal cirrus per notopodium. Branchiae as single branching tufts limited to the anterior part of the body. Setae all hollow and brittle; notosetae include harpoon-setae and capillaries; neurosetae all spurred. No hooks in first setiger.

Type species: *Pseudeurythoe paucibranchiata* Fauvel, 1932.

Pseudeurythoe microcephala Fauvel, 1932

Pseudeurythoe microcephala Fauvel, 1932: 49 pl. 1 figs 5–8, text fig. 9; Fauvel, 1953: 88, figs. 41 a–d and 42 a–e.

Body about 30 mm. long with 120 segments. Prostomium small, the anterior part grooved ventrally and bearing a pair of cirriform antennae dorsally and a similar pair of palps laterally. Posterior part of prostomium roughly square, often hidden under a fold of skin and bears two pairs of eyes and a median antenna similar to the anterior lateral ones. Caruncle very small, oblong and usually hidden. No hooks on setiger 1. Tufted branchiae from setiger 3 to the middle of the body. Notosetae include a few harpoon setae and numerous slender forms with very faint serrations or smooth. Neurosetae are spurred forms of two lengths; most are very long with only a minute spur at the base of a lightly serrated blade while a few are short with a well marked spur and coarser serrations on the longer prong.

Type locality: Maldive Islands.

Records: Natal (29/31/s, d; Mocambique (24/34/5).

Distribution: Tropical Indian Ocean (i, s).

EUPHROSINE Savigny, 1818

Body short and oval with numerous segments; often red in colour. Prostomium elongated with the anterior part bearing the palps and first pair of eyes visible ventrally; posterior part dorsal with the second pair of eyes and three short antennae. Caruncle long and narrow without visible lateral folds. Notosetae in transverse rows across the dorsum but not meeting in the mid-dorsal line. Two dorsal cirri per notopodium. Branchiae bushy and arise as several distinct tufts behind the rows of notosetae. Notosetae may include harpoon-setae and spurred forms some with bent and serrated prongs. Neurosetae forked.

Type species: *Euphrosine myrtosa* Savigny, 1818.

Key to Species

1 Tips of branchial filaments swollen and pointed like acorns (fig. 3.1.v[1]) . . . ***E. capensis***
– Tips of branchial filaments tapering smoothly to blunt tips . . . . . ***E. myrtosa***

Euphrosine capensis Kinberg, 1857
(fig. 3.1.t–y)

Euphrosine capensis Kinberg, 1857: 14; McIntosh, 1885: 1, pl. 2 fig. 5, pl. 1A figs. 1–3.

Body (fig. 3.1.t) ovoid, up to 25 mm. long and red in colour. Antennae and palps short, almost papilliform (fig. 3.1.u[1]). Caruncle (fig. 3.1.u) attached as far back as setiger 5 but overlapping setiger 6. Branchiae from the first foot. Notopodia (fig. 3.1.v) with 9–11 branchial trunks even in juveniles of 10 mm. The terminal branches of the branchiae (fig. 3.1.v[1]) end in ovoid structures like acorns. Dorsal cirri shorter than the gills. First dorsal cirrus median to the first branchial trunk, second median to the third branchial trunk. Notosetae of two types: (a) smooth forked setae with very unequal prongs (fig. 3.1.w); (b) forked "ringent" setae (fig. 3.1.x) with the prongs serrated on their inner margins. Neurosetae (fig. 3.1.y) forked and smooth with unequal prongs.

Type locality: "Cape of Good Hope".

Records: South West Africa (26/15/i) around the Cape (i, s) to Natal (27/32/i) – fairly common under stones.

Distribution: Endemic.

Euphrosine myrtosa Savigny, 1818
(fig. 3.1.z)

Euphrosine myrtosa Savigny, 1818: 332; Fauvel, 1923: 139, fig. 49 k–n; Fauvel, 1953: 101, fig. 48 k–n; Gravier, 1901: 254, pl. 10 figs. 147–149, text-figs. 269–275.

Body ovoid, about 15 mm. long with 36–43 setigers. Colour red to purple. Prostomium with four eyes, a stout, tapered median antenna and smaller anteroventral antennae. Caruncle extending to setiger 5. Six to eight branchial tufts per notopodium. Tips of branchial filaments (fig. 3.1.z) long, evenly tapered and blunt. Dorsal cirri longer than the gills. First dorsal cirrus medial to the first branchial trunk, second medial to the third branchial trunk. Notosetae all forked and of two types: (a) with straight smooth prongs and (b) with curved prongs serrated on their inner margins (ringent setae). Neurosetae forked with smooth straight prongs.

Type locality: Gulf of Suez.

Records: Cape (34/18/s, 32/28/s) to Natal (30/30/s, 29/31/s) and Mocambique (26/32/i) – rare on stones and old coral.

Distribution: Mediterranean; Red Sea; Indian Ocean; tropical W. Africa (Cameroons).

EURYTHOE Kinberg, 1857

Body elongate and rectangular in section. Colour usually pale grey. Prostomium large with two pairs of eyes, three antennae and a pair of palps. Caruncle long and narrow with poorly developed lateral folds mainly concealed by the broad keel.

Parapodia with the notopodium and neuropodium well separated and the setae very brittle and hollow containing poison. Notosetae include harpoon-setae and forked setae. Neurosetae all forked. A single dorsal cirrus per notopodium. Branchiae as single branching tufts per notopodium first appearing on setiger 1–3.

Type species: *Eurythoe chilensis* Kinberg, 1857.

Key to Species

1	Branchiae from setiger 1. Caruncle short	***E. matthaii****
–	Branchiae from setiger 2. Caruncle attached to setiger 3 and often overlapping setiger 4	2
–	Branchiae from setiger 3. Caruncle not exceeding setiger 2 . .	***E. parvecarunculata***
2	A large species reaching 140 mm. Spurred and forked setae smooth . .	***E. complanata***
–	A small species not exceeding 25 mm. Spurred and forked setae with four to six serrations	***E. chilensis***

Eurythoe parvecarunculata Horst, 1912
(fig. 3.2.i–l)

Eurythoe parvecarunculata Horst, 1912: 37, pl. 10 figs. 1–5; Fauvel, 1953: 85, fig. 38 e–i.

Body elongated, up to 220 mm. long for 120 segments. Median antenna much longer than the laterals. Posterior part of the prostomium (fig. 3.2.i) with a very small oval caruncle often hidden by a fold of setiger 2. Branchiae from setiger 3. They have long filaments anteriorly but decrease in size posteriorly. Notosetae include short harpoon-setae (fig. 3.2.k) and spurred setae (fig. 3.2.j) with the tapering longer prong serrated. Neurosetae (fig. 3.2.l) are mainly forked setae plus a few finer setae in anterior segments with a step at the base of a faintly serrated blade.

Type locality: Indonesia.

Records: Natal (29/31/i, s); Mocambique (24/34/s); ? Madagascar (s).

Distribution: Tropical Indian Ocean (i, s); tropical W. Africa (i).

Eurythoe complanata (Pallas, 1766)
(fig. 3.2.a–h)

Aphrodita complanata Pallas, 1766: 109.
Eurythoe complanata: Fauvel, 1953: 83, fig. 38 b–m.
Eurythoe alcyonaria Gravier, 1901: 248, pl. 9 figs. 140–143, pl. 10 figs. 144–146, text-figs. 257–268.

A large species reaching 140 mm. Body (fig. 3.2.b) elongate and flattened. Colour greyish green. Caruncle (fig. 3.2.a) elongated with a flat keel; it is attached as far back as setiger 3 but overlaps setiger 4. Branchaie from setiger 2 onwards. Notosetae of three types: (a) smooth pointed setae (fig. 3.2.d), (b) harpoon-setae with recurved serrations on one side (fig. 3.2.e), (c) fine setae with a small spur or step and a long slender blade with very faint serrations (fig. 3.2.f). Neurosetae of two types:

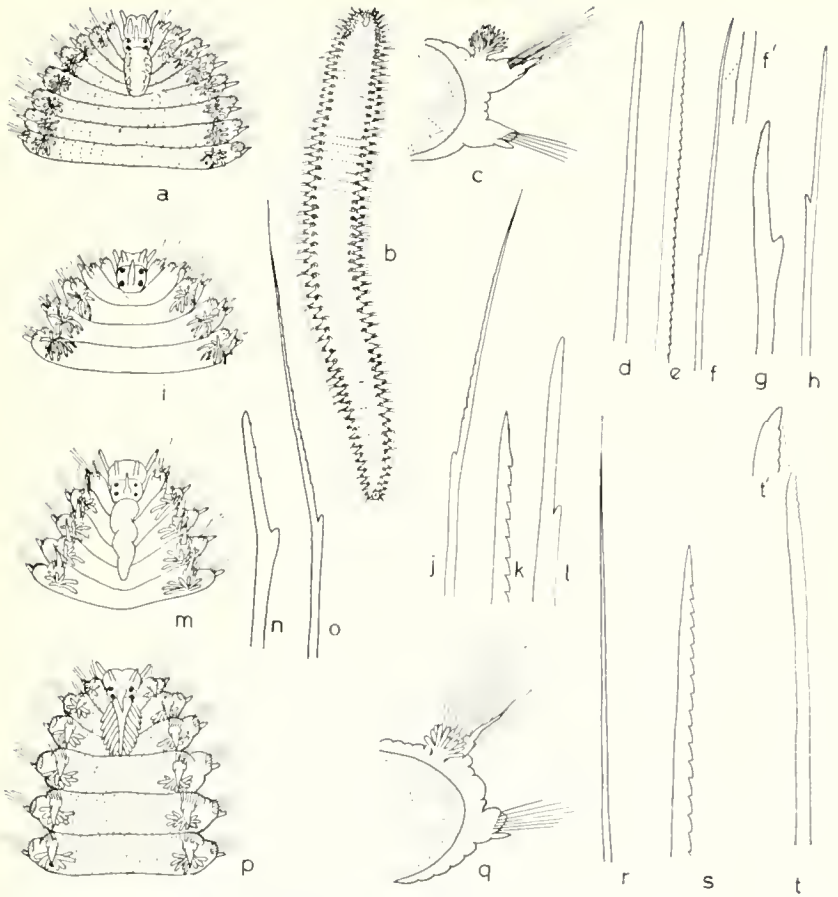

Fig. 3.2. *Eurythoe complanata*. (A) Head. (B) Entire worm (half natural size). (C) Posterior view of foot. (D) Smooth notopodial spine. (E) Harpoon seta. (F) Fine spurred notoseta. (G) Stout neuroseta. (H) Fine neuroseta. *Eurythoe parvecarunculata*. (I) Head. (J) Fine spurred notoseta. (K) Harpoon seta. (L) Stout neuroseta. *Eurythoe chilensis*. (M) Head. (N) Stout spurred notoseta. (O) Fine spurred notoseta. *Pherecardia striata*. (P) Head. (Q) Foot (posterior view). (R) Fine notoseta. (S) Harpoon seta. (T) Neuroseta.

(a) forked setae with smooth prongs of unequal length (fig. 3.2.g) and (b) slender setae with a small spur at the base of a long blade (fig. 3.2.h).

Type locality: Caribbean Sea.

Records: Eastern Cape (31/29/i); Natal (30/30/i to 27/32/i); Mocambique (26/32/i, s); Madagascar (i, s).

Distribution: All tropical seas (i, s).

Eurythoe chilensis Kinberg, 1857
(fig. 3.2.m–o)

Eurythoe chilensis Kinberg, 1857: 13; Monro, 1930: 28, fig. 1 a–e.
Pareurythoe chilensis: Hartman, 1948; 45, pl. 5 fig. 11.

Body small, seldom more than 25 mm. long with 50 segments. Caruncle (fig. 3.2.m) sinuous and elongate, attached as far as setiger 2 but overlapping setiger 3 or even 4. Dorsal cirri long and tapered. Branchiae from setiger 2 as four to seven finger-like branches. Notosetae include (a) harpoon-setae, (b) spurred setae with about two to four widely spaced serrations on the longer prong (fig. 3.2.n), (c) a few long spurred setae with minute serrations or steps on the blade (fig. 3.2.o). Neurosetae have better developed spurs and more serrations than the notosetae. They are mainly stout and similar to (b) but there are also a few long fine setae similar to (c).

Type locality: Chile.

Records: Cape (33/18/i, 34/18/s, 34/22/d, 34/23/d, 33/27/s) – a few specimens on rocks and old shells.

Distribution: Tristan da Cunha (s); southern Chile (i, s).

NOTOPYGOS Grube, 1855

Body oval, slightly flattened. Prostomium transversely divided into a broad anterior portion which is grooved ventrally and bears the subulate palps and a pair of lateral antennae, and a rectangular posterior lobe with four eyes, a median antenna and a large caruncle. The caruncle is fusiform with a pleated crest, smooth sides and broad pleated margins. Branchiae as a single tuft of filaments starting on setiger 5 and present on all posterior segments. Parapodial rami not widely separated. Notopodia with two dorsal cirri and a radiating tuft of forked setae. Neuropodia with a similar tuft of forked neurosetae and a ventral cirrus. Anus dorsal, subterminal.

Type species: *Notopygos crinita* Grube, 1855.

Notopygos cf. ***variabilis*** Potts, 1909

? *Notopygos variabilis* Potts, 1909: 360, pl. 45 fig. 9; Fauvel, 1953: 100 fig. 47 h.

Length up to 35 mm. Colour uniformly pinkish grey in alcohol (possibly the pattern has faded). Caruncle reaching setiger 6 with the smooth sides between the pleated margin and pleated crest not pigmented. Anus on setiger 22 or later. Setae all bifurcated, usually with smooth prongs, but a few anterior neurosetae show faint rings on the external side of the longer prong.

Species of *Notopygos* are distinguished by their colour patterns and to a less extent

on the serration of the setae. The latter character is obviously variable and the colour pattern fades. Whether there is really one variable species or several is open to question.

TYPE LOCALITY: (of *N. variabilis*) Maldive Islands.

RECORDS: (of *N.* cf. *variabilis*) Madagascar (s).

DISTRIBUTION: (of *N. variabilis*) Tropical Indian Ocean.

PHERECARDIA Horst, 1886

Body elongate and depressed. Caruncle well developed with broad, pleated lateral folds. Branchiae bushy with irregular branches arising from a single base. A single dorsal cirrus per notopodium. No forked setae; notosetae include both fine capillaries and harpoon-setae; neurosetae with bent tips.

TYPE SPECIES: *Hermodice striata* Kinberg, 1857.

Pherecardia striata (Kinberg, 1857)
(fig. 3.2.p–t)

Hermodice striata Kinberg, 1857: 13.
Pherecardia lobata Horst, 1912: 32.

Body elongate and up to 60 mm. in length with 60 segments. Dorsum streaked with brown. Prostomium (fig. 3.2.p) with four eyes and a large tapering median antenna much longer than the laterals. Caruncle large with a tapering median ridge and broad lateral folds divided into six to eight lamellae. Bushy branchiae start on setiger 1. The single dorsal cirrus on each notopodium (fig. 3.2.q) has a long stout cirrophore and a long cirrostyle. Notosetae are mainly long, smooth, hair-like capillaries (fig. 3.2.r) but there are also a few stouter harpoon-setae (fig. 3.2.s) in posterior segments. Neurosetae numerous, slightly thicker than the fine notosetae and with the shafts faintly serrated before the bent, abruptly pointed tips (fig. 3.2.t).

TYPE LOCALITY: Society Islands, S. Pacific.

RECORDS: Mocambique (26/32/i); Madagascar (s).

DISTRIBUTION: Tropical Indo-west-Pacific (i); Tahiti.

Family **PISIONIDAE** Levinsen, 1887

Small thread-like worms with numerous segments. The prostomium is either well developed or greatly reduced. When well developed it has a pair of frontal antennae, a pair of lateral palps and two pairs of subdermal eyes. Peristomial segment with two pairs of tentacular cirri. When reduced the prostomium sinks back into the peristome and either lacks antennae entirely or has only one median one and the ventral palps are fused to the peristomial segment which with the tentacular cirri now bears three pairs of appendages and a pair of enlarged acicula directed forwards in front of the mouth. Pharynx eversible with two pairs of chitinous jaws. Normal body segments uniramous, each parapodium having small dorsal and ventral cirri and a setigerous lobe with one or two acicula. Setae either absent, compound or simple. Pygidium with a pair of anal cirri. Copulatory organs may be present.

Records from southern Africa

Pisione africana Day	56Cs
Pisionidens indica (Aiyar and Alikunhi)	53Ni
as *Fauveliella pulchra* Tebble	42Ni
as *Pisionidens pulchra* (Tebble)	45Ni

Remarks. The pisionids are a rare group of small worms. *Pisione* itself is dredged on soft, silty bottoms and is remarkable for the reduction of the prostomium and the possession of a pair of acicula which projects obliquely forward in front of the mouth. It has two pairs of true jaws far back but possibly these acicula act as additional jaws. *Pisionidens* is in some respects a very primitive worm and in others a very specialised one. It is an active burrower in tropical surf beaches and has a well developed primitive type of head. Sperm is transferred by copulation and the complex reproductive organs are reminiscent of some of the Archiannelida. On the other hand it has uniramous parapodia and lacks setae in the adult.

Key to Genera

1 Prostomium well developed with a pair of antennae, and a pair of palps. Peristomium with only two pairs of tentacular cirri . . . . . ***PISIONIDENS*** (p. 132)
– Prostomium reduced and sunken into the peristomial segment which now bears the large palps as well as two pairs of tentacular cirri 2
2 No prostomial appendages. The bases of the acicula of the first setiger project between the bases of the palps (fig. 4.1.a) . . . . . ***PISIONE*** (p. 133)
– Prostomium with a single median antenna. No acicula projecting forwards ***PISIONELLA****

PISIONIDENS Aiyar & Alikunhi, 1943

Body elongate with numerous segments. Prostomium well developed with a pair of frontal antennae, a pair of lateral palps and subdermal eyes. Peristome posterior to the prostomium and bears two pairs of tentacular cirri. Two pairs of chitinous jaws. Body segments with uniramous parapodia having small dorsal and ventral cirri and an elongated setigerous lobe. Mature males with copulatory organs.

Type species: *Pisionella indica* Aiyar & Alikunhi, 1940.

Pisionidens indica (Aiyar & Alikunhi, 1940)
(fig. 4.1.f–j)

Pisionella indica Aiyar & Alikunhi, 1940: 89, figs. 1–9, pls. 1–2.

Body elongate, slender and depressed, about 25 mm. long for 70 segments. Prostomium (fig. 4.1.h) a depressed cone with one pair of frontal antennae and a pair of lateral palps with basal sheaths. Four subdermal eyes close together. Peristome fused to the prostomium and bears two pairs of long tentacular cirri. Mouth as a ventral slit at the level of the tentacular cirri. Pharynx with marginal papillae and two pairs of small, lightly chitinised jaws. Body (fig. 4.1.i) with dorso-lateral muscular ridges and lateral grooves. Segments poorly defined. Parapodia (fig. 4.1.j) with small biarticulate dorsal and ventral cirri and an elongate setigerous lobe supported by an aciculum but without setae in the adult. The first five to six parapodia lack setigerous lobes. Sexes separate. In the adult male certain middle segments (fig. 4.1.f) contain sperm and the next segment develops a club-shaped vesicula seminalis which opens on a large genital papilla which acts as a copulatory organ. In the female the segment following the ovary (fig. 4.1.g) develops a receptaculum seminis opening below the parapodium. A series of segmental genital suckers in the median ventral line. Pygidium with a pair of long and cirri.

Type locality: Madras.

Records: Natal (29/31/i) – not uncommon in localised areas on surf beaches.

Distribution: India (i).

PISIONE Grube, 1856

Small thread-like worms with numerous segments. Proboscis eversible with marginal papillae and four chitinous jaws. Prostomium reduced, indistinct and lacks antennae; it has sunk back into the peristomial segment and fused with it. One to two pairs of subdermal eyes far back. Peristomial segment with three pairs of appendages; the long forwardly directed palps with basal sheaths, and two pairs of smaller biarticulate tentacular cirri. Acicula of the peristomial segment enlarged and directed forwards so that their proximal ends project between the bases of the palps. Normal body segments uniramous with small dorsal and ventral cirri and a long setigerous lobe with two acicula and both compound and simple setae. Genital papillae sometimes present. Pygidium with a pair of anal cirri.

Type species: *Pisione oerstedi* Grube, 1856.

Pisione africana Day, 1963
(fig. 4.1.a–e)

Pisione africana Day, 1963a: 390, fig. 2 a–e.

Small thread-like worms up to 20 mm. long with 75 segments. Prostomium (fig. 4.1.a) minute and completely enveloped by the peristomial segment. One pair of subdermal eyes possibly formed of two fused pairs. Two pairs of jaws. Peristomial

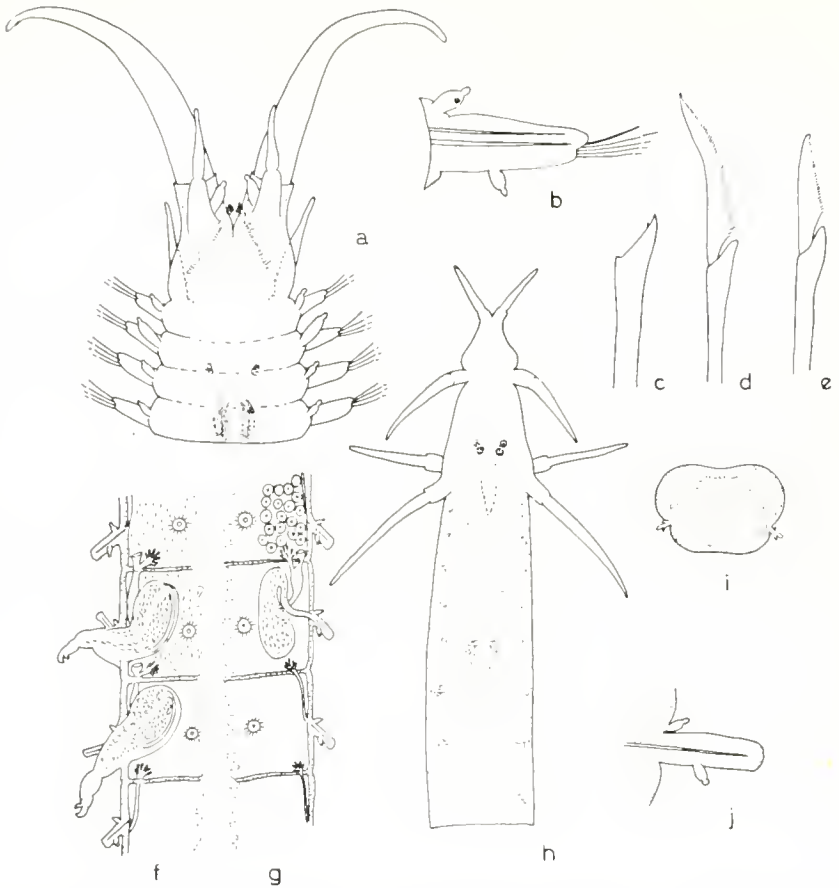

FIG. 4.1. *Pisione africana.* (A) Head. (B) Parapodium. (C) Superior simple seta. (D) Superior compound seta. (E) Inferior compound seta. *Pisionidens indica* (after Aiyar and Alikunhi). (F) Diagram of male organs on the left side showing sperm in two segments, genital funnels fused to the nephridia whose ducts are enlarged as vesicula seminales and open on genital papillae with terminal claspers. Ventral suckers shown as star-like structures. (G) Diagram of female organs on the right side showing ova in one segment followed by the genital funnel leading through the receptaculum seminis. (H) Anterior end with dotted lines indicating the position of the mouth, jaws and parapodia. (I) Diagrammatic section showing longitudinal muscles and the origin of a parapodium. (J) Parapodium with internal aciculum and terminal glands.

segment with a pair of large palps with sheathed bases and two pairs of biarticulate tentacular cirri of which the ventral pair are very small and papilliform. Peristomial aciculа enlarged and directed forwards to project between the bases of the palps. Segment 2 (the first setiger) with a small papilliform dorsal cirrus, a much

larger tapered ventral cirrus directed forwards and a setigerous lobe with normal setae. Dorsal cirrus of setiger 2 enlarged. Normal parapodia (fig. 4.1.b) with small, subequal dorsal and ventral cirri each of which is bottle-shaped, indistinctly two-jointed and tipped with long cilia. The setigerous lobe is long and provided with two rounded presetal lips and a smaller postsetal one. There are two internal acicula and five setae. The superior one is a stout simple seta (fig. 4.1.c) with an expanded and obliquely truncate end. Other setae compound, one having a long tapering blade (fig. 4.1.d) and the other three with short, falcigerous blades (fig. 4.1.e). Reproductive organs unknown.

Type locality: Agulhas Bank, South Africa.

Records: Cape (34/18/s, 34/21/s, 33/25/s) – Juveniles common in grab samples from sandy mud.

Distribution: Endemic.

Family **PHYLLODOCIDAE** Williams, 1851

Body long, slender and often green in benthonic forms but short, flattened and transparent in planktonic ones. Prostomium distinct, broad and rounded to cordiform. One pair of eyes. Two pairs of frontal antennae and often a median dorsal one as well but this may be reduced to a posterior occipital papilla or be entirely absent. Proboscis unarmed but usually long and papillose. The first one to three segments are modified and may be partly reduced or fused; they may lose some or all of their setae and the cirri may elongate to form tentacular cirri. Normal body segments usually with uniramous parapodia bearing compound spinigerous setae and lamellar dorsal and ventral cirri.

Key to Subfamilies

1 Body elongate and vermiform. Eyes well developed. Benthonic . . . Phyllodocinae (p. 136)
– Body short, flattened and transparent. Eyes faint or absent. Planktonic . . . Lopadorhynchinae (p. 156)

Subfamily **PHYLLODOCINAE** Williams, 1851

Benthonic worms with long slender bodies, numerous segments and often green or orange in colour. Prostomium usually cordiform with well developed eyes and often a median dorsal antennae or posterior occipital papilla. Proboscis long, eversible and usually papillose. Tentacular cirri on the first one to three segments which may be partially fused or have reduced parapodia. Normal segments usually with uniramous parapodia but occasionally the notopodial aciculum is present in the dorsal cirrophore. Dorsal and ventral cirri lamellar. Setae compound and spinigerous, never acicular.

Records from southern Africa

Eteone foliosa Quatrefages	41Ci, 50Cs
as *Eteone spetsbergensis* (? Malmgren)	13Ci
Eteone ornata Grube	45Pi
Eteone (*Mysta*) *siphodonta* (Delle Chiaje)	50Cs
Eteone sp.	50Cs
Eulalia (*Hypoeulalia*) *bilineata* (Johnston)	50Cs
Eulalia (*Steggoa*) *capensis* Schmarda	4Ci, 10Ci, 11Wi, 12Ci, 21Ci, 50Cs
as *Eulalia viridis* (non Müller)	21Ci
as *Eulalia viridis* var. *capensis* Schmarda	13Ci, 26Wis, 36Ci, 41Ci
as *Steggoa magalhaensi* (non Kinberg)	34Wi
Eulalia (*Sige*) *falva* Day	50Cs
Eulalia (*Pterocirrus*) *macroceros* Grube	50Cs
as *Eulalia ? macroceros*	41Ci

Eulalia (*Eumida*) *sanguinea* Oersted	41Ci, 50Cs
Eulalia trilineata St. Joseph	50Cs
as *Eulalia* cf. *albopicta*	40Ni
as *Eulalia* cf. *trilineata*	40Ni
Mystides angolaensis Augener	26Ai
Notophyllum splendens (Schmarda)	7Ci, 41Ci, 50Cs
as *Macrophyllum splendens* Schmarda	4Ci
as *Macrophyllum leucopterum* Schmarda	4Ci
Phyllodoce (*Paranaites*) *capensis* Day	50Cs
Phyllodoce (*Genetyllis*) *castanea* (Marenzeller)	40Ni, 48Ci, 50Cs, 53Ni
as *Phyllodoce rubiginosa* (non St. Joseph)	26Wis, 36Ci
Phyllodoce fristedti Bergström	Ms
Phyllodoce (*Anaitides*) *longipes* Kinberg	56Cs
Phyllodoce (*Anaitides*) *madeirensis* Langh	40NiPi, 50Cs, 53NiMi
as *Phyllodoce africana* Augener (partim)	26Ai
as *Phyllodoce oculata* (non Ehlers)	26Ai
as *Phyllodoce patagonica* (non Kinberg)	33Cs
Phyllodoce malmgreni Gravier	45PiNi
Phyllodoce (*Sphaerodoce*) *quadraticeps* Grube	45Pi
Phyllodoce schmardai Day	56Cs
as *Phyllodoce macrophthalma* (non Grube)	21Ci, 50Cs
Phyllodoce tubicola Day	56Csd
Phyllodoce sp. (TRA 133 L)	50Cs
Protomystides capensis Day	50Cs

BIOLOGICAL NOTES

The phyllodocids are a group of slender errant worms often brilliant green or yellow or even red. Most of them live in crevices or under stones and only *Eteone* is a typical sand dweller. As might be expected it is usually white in colour. Their active habits and remarkably well developed eyes suggest that the phyllodocids are carnivorous but no form of prey has been found in the gut. For that matter no plant remains or silt have been found either. Dales is of the opinion that the Phyllodoeids are amongst the most promitive of polychaetes; if so then *Notophyllum* is more primitive than the rest for it is the only genus which has notopodial acicula and even here notosetae are lacking.

THE MAIN DIAGNOSTIC CHARACTERS

The prostomium This always bears two pairs of antero-lateral antennae and sometimes a median dorsal one as well so that there are four or five altogether. In the genus *Phyllodoce* there are never more than four fully developed antennae but there is often an *occipital papilla* in the notch between the posterior lobes of the heart-shaped prostomium. Possibly this represents a rudiment of the fifth antenna of the primitive genus *Notophyllum*.

The proboscis. This is usually papillose and sometimes the nature and arrangement of papillae at the base of the proboscis differs from that towards the distal end. If the proboscis is not everted it should be dissected by a median ventral slit from the mouth backwards.

The tentacular segments and the tentacular cirri. Bergström (1914) who made a very thorough revision of the family based his main divisions on the number of tentacular segments and the degree of reduction and fusion between them and the prostomium. The phylogenetic value of his work is not disputed but while it is easy to count the number of tentacular segments it is not easy to decide the degree of fusion between them. The head end contracts on fixation and the degree of real fusion then becomes a matter of opinion. None the less this character is useful within limits.

The dorsal and ventral cirri of the tentacular segments may be normally short and lamellar or become elongated and cylindrical; again the setigerous lobes, acicula and setae may be reduced or lost entirely. To summarise these characters a "tentacular formula" has been developed in which the symbols 1 or N represent an elongate or a normal lamellar cirrus, S or 0 represent setae present or absent and a or o represent an aciculum present or absent. Thus the tentacular formula of *Eulalia trilineata is* $1 + 0^{01}_{a1} + S^{01}_{aN}$. This should be interpreted as three tentacular segments of which the first has one elongate tentacular cirrus only, the second has no setae but elongate dorsal and ventral cirri and an aciculum in the ventral cirrophore while the third segment has setae, an elongate dorsal cirrus without an aciculum and a short lamellar ventral cirrus with an aciculum in the setigerous lobe. In more detailed descriptions it is sometimes necessary to describe a particular tentacular cirrus and this may be specified as D2 or D3 referring to the dorsal cirrus of the second or third segment or V2 or V3 for the ventral homologues.

One final point may be added here. The presence or absence of setae on the tentacular segments is constant and they are reasonably easy to see and of great importance; the presence or absence of acicula, however, is very difficult to ascertain without damaging the specimen and in more recent work they are often omitted from the tentacular formula. In this way the tentacular formula for *Eulalia trilineata* would be simplified as $1 + 0^{1}_{1} + S^{1}_{S}$.

Parapodia of body segments. Apart from the primitive genus *Notophyllum* which has an aciculum and sometimes a few setae issuing from the dorsal cirrophore, the Phyllodocids have uniramous parapodia. The literature contains detailed descriptions of the shapes of the dorsal cirri but the examination of even a single worm will show how much they vary along the length of the body. For this reason only major differences in shape are of taxonomic importance. The setigerous lobe normally has a notched presetal lip and a single rounded postsetal one but occasionally the upper part of the presetal lip may be produced as a pointed lobe. The ventral cirri are of minor importance. The setae are compound and spinigerous and the sculpturing of the shaft-head is worth examination.

Colour. The general background coloration is usually green (which fades to brown) but occasionally some shade of red or yellow. Apart from major differences such as this the background coloration is variable and in any case it is affected by

preservatives and storage. Pattern is more important and may provide a rapid means of preliminary sorting for later, more laborious confirmation.

Key to Genera

1 Two pairs of tentacular cirri on one segment; no dorsal cirrus on tentacular segment 2; formula 0^1_i (fig. 5.1.a). Four antennae . . . . . ***ETEONE*** (p. 139)
– More than two pairs of tentacular cirri borne on two or three segments. Four or five antennae 2
2 Three pairs of tentacular cirri. Four antennae 3
– Four pairs of tentacular cirri. Four or five antennae 5
3 Tentacular cirri on three segments; formula $1 + S^1_N + S^1_N$ (fig. 5.1.n) ***PROTOMYSTIDES*** (p. 143)
– Tentacular cirri on two segments; dorsal cirrus absent on segment 3 4
4 Setae present on segment 2; formula $1 + S^1_i$ (fig. 5.1.q). . . ***MYSTIDES*** (p. 141)
– No setae on segment 2; formula $1 + 0^1_i$ . . . . . ***ETEONIDES****
5 Four antennae and often an occipital papilla . . . . ***PHYLLODOCE*** (p. 143)
– Five antennae. Occipital papilla absent 6
6 Parapodia biramous with an aciculum and sometimes setae in the notopodium (fig. 5.3.m) ***NOTOPHYLLUM*** (p. 150)
– Parapodia uniramous . . . . . ***EULALIA*** (p. 151)

ETEONE Savigny, 1818

Body elongate and depressed. Prostomium anteriorly truncate with four antennae and a pair of subdermal eyes often difficult to see. Two pairs of cylindrical tentacular cirri on the first segment, the tentacular formula being 0^1_i; the second segment lacks a dorsal cirrus but has a normal foliaceous ventral one and sometimes a setigerous lobe and setae as well. Body segments with small rounded, foliaceous dorsal and ventral cirri. Parapodia uniramous with compound setae. Colour usually whitish.

Type species: *Nereis flava* Fabricius, 1780.

Key to Species

1 The first segment behind the tentacular cirri has a setigerous lobe and setae. (Proboscis with paired ventro-lateral rows of large triangular papillae and a dorsal band of minute denticulate papillae. Dorsum uniformly brown) . . ***E.*** (***M.***) ***siphodonta***
– The first segment behind the tentacular cirri lacks a setigerous lobe and setae . . . 2
2 Body with three rows of dark spots. Proboscis with three to four rows of swollen papillae ***E. ornata***
– Body uniformly pale. Proboscis with four rows of large papillae. (Dorsal cirri asymmetrical, broader than long) . . . . . ***E. foliosa***
– Body uniformly pale. Proboscis unknown. (Prostomium slender. Tentacular cirri very small) . . . . . ***E. sp.*** (TRA. 108K)

Eteone (*Mysta*) *siphodonta* (Delle Chiaje, 1822)
(fig. 5.1.a–e)

Lumbrinerus siphodonta Delle Chiaje, 1825: pl. 80.
Mysta siphonodonta: Bergstrom, 1914: 205, text-fig. 78.
Eteone siphonodonta: Fauvel, 1923: 178, fig. 63 e–h.
Eteone (*Mysta*) *syphonodonta:* Day, 1960: 305.

Body (fig. 5.1.c) elongate and flattened reaching 200 mm. with 350 segments. It is uniformly mauve brown dorsally and pale ventrally. Prostomium (fig. 5.1.a) a depressed truncate cone. Antennae equal and slender. Eyes clearly visible. Tentacular cirri subequal and about as long as the breadth of the tentacular segment. The next segment lacks a dorsal cirrus but has a setigerous lobe with several setae and a ventral cirrus. Proboscis with a wide dorsal band of minute flattened and denticulate papillae, paired ventrol-lateral rows of large triangular papillae and a narrow ventral streak in which small globular papillae are reported in Mediterranean specimens. None were found in South African specimens. Dorsal cirri (fig. 5.1.d) ovate, 1·5—2 times as long as broad and borne on fairly long cirrophores. Setigerous lobe blunt and notched. Ventral cirrus bluntly pointed. Setae (fig. 5.1.e) 15–20 in number with fairly long blades and asymmetrical spiney shaft-heads, there being one large blunt tooth and three to five small ones.

Type locality: Naples.

Records: False Bay (34°18′S) to Natal (29°31′S) – occasional specimens.

Distribution: Mediterranean (s); Morocco (s, d); Senegal (i, s, d).

Eteone ornata Grube, 1877
(fig. 5.1.f–i)

Eteone ornata Grube, 1877: 106; Fauvel, 1932: 73; Fauvel, 1953: 128, fig. 65 a–d; Day, 1957: 69.

Body pale with three rows of spots plus marks on the dorsal and ventral cirri. Prostomium (fig. 5.1.f) notched laterally and longer than broad. Four small antennae. Eyes small and below the surface. Proboscis with four rows of large soft papillae proximally but reduced to three rows distally (fig. 5.1.g). Two pairs of tentacular cirri which are cylindrical and tapered. No dorsal cirrus, setigerous lobe or setae on the second segment. Very few setae on the third and fourth segments but the fifth has many. Dorsal cirri (fig. 5.1.h) small, roughly oval, broader than long and arise from broad cirrophores. Setigerous lobe conical; ventral cirrus ovoid, slightly pointed, longer than setigerous lobe. A fan of about 20 setae with toothed shaft-heads and tapered blades (fig. 5.1.i).

Type locality: Japan.

Records: Mocambique (26°32′E) – a single record.

Distribution: India (s); Philippine Is.; N. Japan.

Eteone foliosa Quatrefages, 1865
(fig. 5.1.j–m)

Eteone foliosa Quatrefages, 1865: 164; Fauvel 1923: 174, figs. 62. g–k.

Body white and tapered reaching a length of 120 mm. Prostomium (fig. 5.1.j) a flattened cone, truncate anteriorly. Four short antennae and two subdermal eyes. Pharynx short and broad with four rows of large papillae (fig. 5.1.k). Two pairs of short, tapered tentacular cirri, the inferior pair being slightly longer than the superior. Second parapodium reduced to a ventral cirrus, there being neither dorsal cirrus, nor setigerous lobe nor setae. Dorsal cirri (fig. 5.1.l) reniform. Ventral cirrus ovoid. Setae (fig. 5.1.m) with a stout curved spine on the shaft-head.

Type locality: Atlantic coast of France.

Records: Cape (33/17/s, 33/18/i, s, 34/18/i, s, 34/23/e, s, d) – occasionally found in sand.

Distribution: British Isles (i, s); English Channel (i); Bay of Biscay (i).

Eteone sp. (TRA. 108.K)

Body elongate and pale in alcohol. Prostomium very narrow and tapered, twice as long as broad. Proboscis unknown. Tentacular cirri very small, the dorsal pair half the length of the ventral pair which is one third of the breadth of the tentacular segment. The next segment lacks not only a dorsal cirrus but also a setigerous lobe and setae. Dorsal cirri small, roughly semicircular and no broader than the cirrophores. Setigerous lobes blunt and not notched. Ventral cirri ovoid. Setae about 10 per bundle with asymmetrical shaft-heads having a large tooth on one side and a minute one on the other. Blades short and strongly tapered.

MYSTIDES Théel, 1879

Body small and elongate. Prostomium rounded or ovoid. Two eyes. Four antennae but no occiptal papilla. Three pairs of tentacular cirri on two distinct segments, the formula being: S1 + 1^{01}_{a1} No dorsal cirrus on segment 3. Proboscis covered with papillae. Dorsal and ventral cirri foliaceous. Parapodia uniramous. Setae compound and spinigerous.

Type species: *Mystides borealis* Théel, 1879.

Mystides angolaensis Augener, 1918
(fig. 5.1.q–s)

Mystides angolaënsis Augener, 1918: 178, pl. 2 figs. 32–34; Hartman-Schröder, 1953: 212, figs. 12–14.

The single specimen recorded was 1 mm. long, yellowish white and elongate and with 15 segments. Prostomium (fig. 5.1.q) broadly cordate; eyes large. Antennae $\frac{3}{4}$ prostomial length. Tentacular segments not distinct. Tentacular cirri of

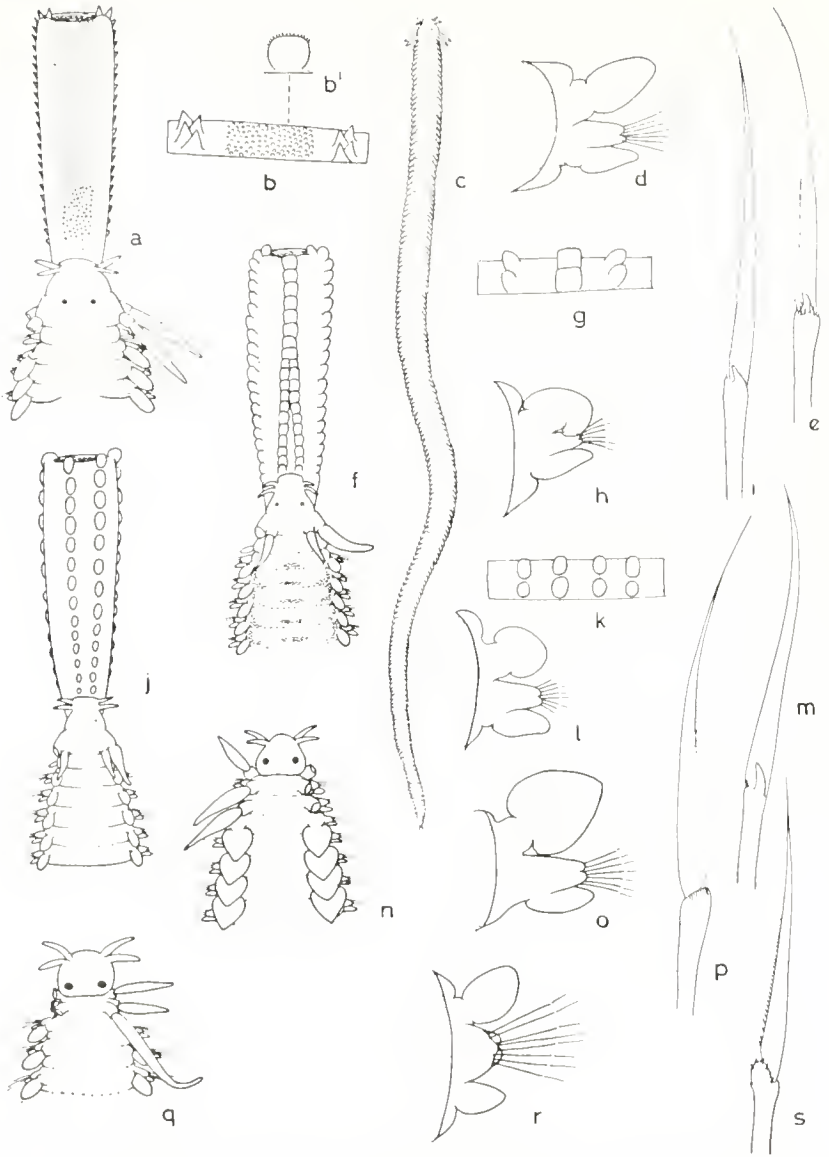

FIG. 5.1. *Eteone siphodonta*. (A) Head with proboscis partly extruded. (B) Section of proboscis cut in the mid-ventral line and flattened. (B¹) Details of dorsal papilla. (C) Entire worm (natural size). (D) Foot. (E) Seta. *Eteone ornata*. (F) Head with proboscis partly extruded. (G) Section of proboscis cut in the mid-ventral line and flattened. (H) Foot. (I) Seta. *Eteone foliosa*. (J) Head with proboscis partly extruded. (K) Section of proboscis cut in the mid-ventral line and flattened. (L) Foot. (M) Seta. *Protomystides capensis*. (N) Head. (O) Foot. (P) Seta. *Mystides angolaensis*. (Q) Head. (R) Foot. (S) Seta (modified from Wesenberg-Lund).

segment 1 and V_2 subequal and spindle-shaped; D_2 long and cylindrical, exceeding the segmental breadth. Dorsal cirri (fig. 5.1.r) ovoid. Setae (fig. 5.1.s) with serrated shaft-heads.

Type locality: Kinsembo, Angola.

Records: Not recorded from southern Africa.

Distribution: Angola.

PROTOMYSTIDES Czerniavsky, 1882

Body elongate. Prostomium with four antennae and one pair of eyes or none. No occipital papilla. Proboscis covered with irregularly arranged papillae. Three cylindrical tentacular cirri borne on three segments. Tentacular formula $1 + S^1_N + S^1_N$. Parapodia uniramous. Setae compound and spinigerous.

Type species: *Mystides bidentata* Langerhans, 1880.

Protomystides capensis Day, 1960
(fig. 5.1.n–p)

Protomystides capensis Day, 1960: 306, fig. 6 d–f.

Body slender, about 15–20 mm. long and orange red in life but brown in alcohol. Prostomium (fig. 5.1.n) small and cordate. Antennae slender, eyes lateral. Proboscis unknown. First tentacular segment fused to the head but the second and third distinct and separate. All tentacular cirri cylindrical but short; D2 which is the longest being only 1·5 times the prostomial length. Setigerous lobes and setae present on the second and third tentacular segments giving the formula $1 + S^1_N + S^1_N$. Dorsal cirri (fig. 5.1.o) cordate and as broad as long. Setigerous lobe fairly long and bluntly rounded apically. Ventral cirri oval. Setae (fig. 5.1.p) 12–18 per parapodium, with swollen symmetrical shaft-heads which are striated distally and short blades.

Type locality: Off Saldanha Bay, South Africa.

Records: Cape (32/17/s, 33/17/s) – two specimens only.

Distribution: Two records.

PHYLLODOCE Savigny, 1818
(including *ANAITIDES* Czerniavsky, 1882)

Body elongate with numerous segments. Prostomium oval to cordate with two pairs of frontal antennae and often an occipital papilla in the posterior notch. Two eyes. Four pairs of tentacular cirri on the first three segments which may be more or less fused or reduced. The second and third tentacular segments may bear setae. Proboscis long and usually papillose. Dorsal and ventral cirri foliaceous. Parapodia uniramous. Setae compound and spinigerous.

Type species: *Phyllodoce laminosa* Savigny, 1818.

KEY TO SPECIES

1 Setae absent from all tentacular segments. Dorsal cirri variable. (Formula $1 + 0^1_i + 0^1_N$.) 3
– Setae present on third or the second and third tentacular segments. Dorsal cirri cordate 3
2 Setae on the third tentacular segment. (Formula $1 + 0^1_i + S^1_N$.) 7
– Setae on second and third tentacular segments. (Formula $1 + S^1_i + S^1_N$.) . 8
3 Proboscis with regular rows of papillae at the sides of the base (s.g. *Anaitides*) . . 4
– Proboscis with irregularly arranged papillae (s.g. *Phyllodoce*) 5
4 Setigerous lobe pointed. Dorsal cirri cordate becoming almost reniform ***P. longipes*** (p. 144)
– Setigerous lobe bluntly rounded. Dorsal cirri hastate becoming rhomboidal ***P. madeirensis*** (p. 145)
5 Tentacular cirri short and swollen except D2 which is cylindrical and tapered. Dorsal cirri oval . . . . . ***P. quadraticeps*** (p. 145)
– Tentacular cirri all cylindrical and tapered. Dorsal cirri hastate to rhomboidal . . 6
6 Prostomium a long oval with postero-lateral lobes. Occipital papilla minute. Colour uniform . . . . . ***P. fristedti*** (p. 147)
– Prostomium cordate. Occipital papilla absent. Dorsum striped . ***P. malmgreni*** (p. 147)
7 First and second tentacular segments fused and cover part of prostomium ***P. capensis*** (p. 148)
– First segment not visible dorsally, second and third segments distinct and separate ***P. tubicola*** (p. 148)
8 Body reddish. First and second tentacular segments fused dorsally. Occipital papilla absent . . . . . ***P. castanea*** (p. 149)
– Body green. First segment not visible dorsally, second and third distinct and separate. Occipital papilla small . . . . . ***P. schmardai*** (p. 149)

Phyllodoce* (*Anaitides*) *longipes Kinberg, 1866
(fig. 5.2.a–c)

Phyllodoce (*Anaitides*) *longipes* Kinberg, 1866: 241; Ehlers, 1901: 72, pl. 7 figs. 1–4; Day, 1963a: 394, fig. 3 d–f.

Length up to 25 mm. with the first three normal segments dusky and later segments with three dark spots. Prostomium (fig. 5.2.a) longer than broad, almost oval with a deep posterior notch but no occipital papilla seen in South African specimens. Eyes large. Proximal half of proboscis with long, regular rows of papillae at the sides, about 14 papillae per row; distal half with rugose ridges. First tentacular segment not visible dorsally, the second indistinct and only the third quite separate. Tentacular cirri all rounded in section and tapered, the longest being D2. No setae on any tentacular segment, the formula being $1 + 0^1_i + 0^1_N$. Dorsal cirri (fig. 5.2.b) large and cordate anteriorly, often dusky, but becomes broader, almost reniform posteriorly. Setigerous lobe with the superior division of the presetal lip long and pointed. Ventral cirri with pointed tips about as long as the setigerous lobes. Setae (fig. 5.2.c) with oval striated shaft-heads and serrated tapering blades.

TYPE LOCALITY: Chile.

RECORDS: Cape (31/18/s, 33/27/s) Mocambique (24/34/s).

DISTRIBUTION: Valparaiso (i); Chile; California (i).

Phyllodoce (*Anaitides*) *madeirensis* Langerhans, 1880
(fig. 5.2.d–g)

Phyllodoce (*Anaitides*) *madeirensis* Langerhans, 1880: 307; Fauvel, 1923: 150, fig. 23 d–h.

Body (fig. 5.2.e) up to 100 mm. long, tapered and greenish. Prostomium (fig. 5.2.d) cordate with a deep posterior notch and an occipital papilla. Base of proboscis with six lateral rows of flattened papillae with about 11 papillae per row. A median dorsal row of four to five may also be present. Distal part of the proboscis with rugose ridges. First tentacular segment invisible dorsally, the second and third distinct and separate. No setae on any of the tentacular segments, the formula being $1 + 0^{1}_{i} + 0^{1}_{N}$. Tentacular cirri all long and cylindrical. Dorsal cirri (fig. 5.2.f) hastate to rhomboidal and often curve over the dorsum. Setigerous lobes apically blunt and rounded. Ventral cirri oval, distally pointed and slightly longer than the setigerous lobes. Setae (fig. 5.2.g) fairly numerous and have oval, strongly striated shaft-heads and long tapered blades. Specimens found in depths of 20 metres or more are pale with scattered black dorsal cirri but are structurally identical with green intertidal forms.

Type locality: Madeira Island.

Records: Cape (33/17/d and 34/18/i, s); Natal (31/29/i to 29/31/i, s); Mocambique (26/32/i and 23/35/e); Madagascar (s) – fairly common under stones.

Distribution: Cosmopolitan in temperature and tropical seas (i, s, d).

Phyllodoce quadraticeps Grube, 1878
(fig. 5.2.h–j)

Phyllodoce quadraticeps Grube, 1878: 98; Gravier, 1900: 198, pl. 10 figs. 22–24, text-figs. 56–60.
Sphaerodoce quadraticeps: Bergström, 1914: 154, fig. 50.

Body over 100 mm. long but slender and yellowish with a dark cross-bar on each segment. Prostomium (fig. 5.2.h) oval to square and with an occipital papilla in the posterior notch. Antennae ovoid. A papilliform (? nuchal) organ in front of the first tentacular cirrus. Proboscis very long and covered with irregularly arranged papillae. Tentacular segment 1 not visible dorsally, but the second and third distinct and separate. Tentacular cirri unusual, only D2 being cylindrical and tapered, the others having long cirrophores and short, swollen cirrostyles. Tentacular segments without setae, the formula being $1 + 0^{1}_{i} + 0^{1}_{N}$. Dorsal cirri (fig. 5.2.i) reddish, oval and broader than long. Setigerous lobes long, faintly bilobed. Ventral cirri oval. Only five to six short setae per parapodium with swollen striated shaft-heads and short, dagger-like blades (fig. 5.2.j).

Type locality: Philippine Islands.

Record: Mocambique Is. (i) – a single record.

Distribution: Tropical Indo-west-Pacific (i).

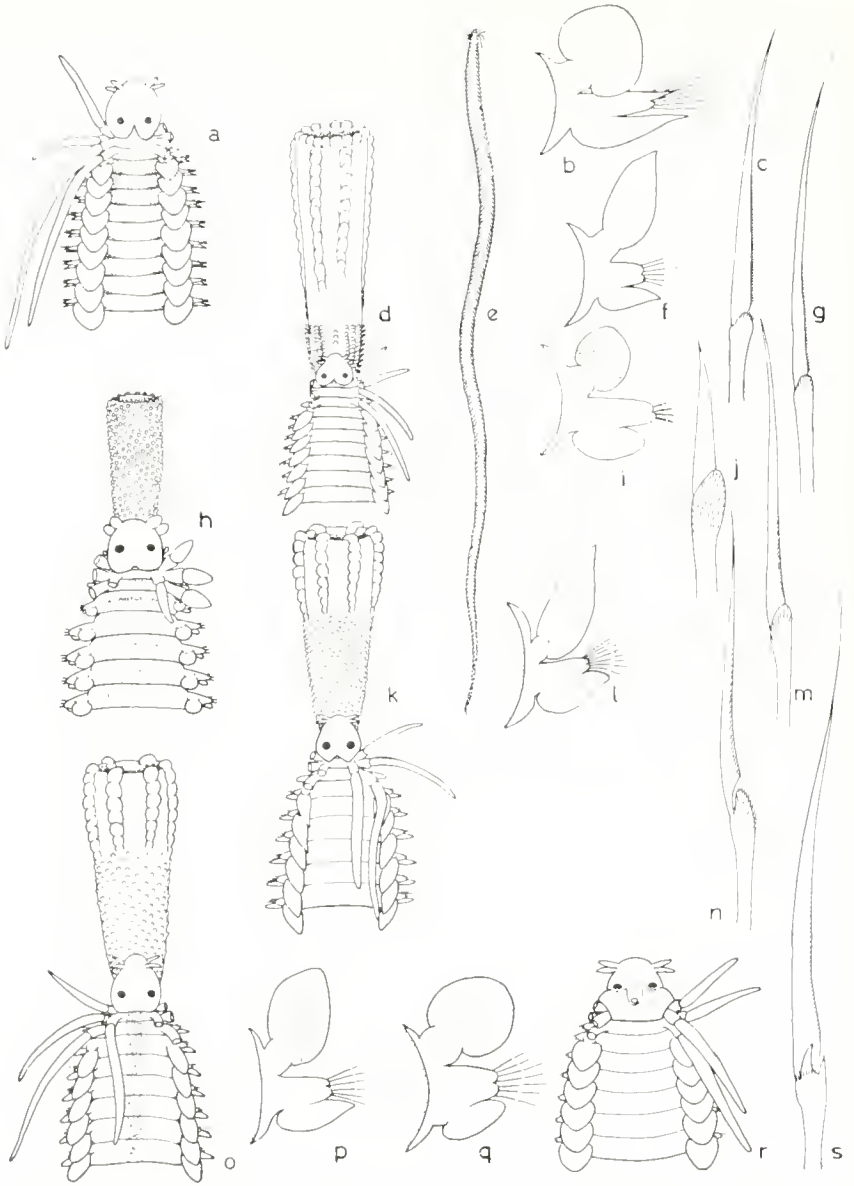

FIG. 5.2. *Phyllodoce longipes*. (A) Head. (B) Foot. (C) Seta. *Phyllodoce madeirensis*. (D) Head and everted proboscis. (E) Entire worm (natural size). (F) Foot. (G) Seta. *Phyllodoce quadraticeps*. (H) Head with proboscis partly everted. (I) Foot. (J) Seta. *Phyllodoce fristedti*. (K) Head with proboscis partly everted. (L) Anterior foot. (M) Seta. *Phyllodoce malmgreni*. (N) Seta. (O) Head with proboscis partly everted. (P) Foot. *Phyllodoce capensis*. (Q) Foot. (R) Head. (S) Seta.

Phyllodoce fristedti Bergström, 1914
(fig. 5.2.k–m)

Phyllodoce fristedti Bergström, 1914: 152, pl. 3 fig. 1, text-fig. 49; Fauvel, 1953: 118, fig. 58 a–b; Day, 1962: 636.

Body very long and slender reaching 100 mm. by 2 mm. Colour uniformly bluish green. Prostomium (fig. 5.2.k) cordate with large postero-lateral lobes and a minute occipital papilla in the posterior notch. Proboscis covered with small irregularly arranged papillae proximally and six rugose ridges distally. First tentacular segment not visible dorsally, the second and third distinct and separate. All tentacular cirri long and cylindrical. No setigerous lobes or setae on any tentacular segment, the formula being $1 + 0^{1}_{i} + 0^{1}_{N}$. Dorsal cirri (fig. 5.2.l) hastate anteriorly but become rhomboidal with obliquely truncate ends posteriorly. Setigerous lobes bluntly rounded. Ventral cirri oval and longer than the setigerous lobes. Setae fairly numerous with oval shaft-heads which are marked by striate distally and have tapering blades (fig. 5.2.m).

Type locality: Ceylon.

Records: Madagascar (s).

Distribution: Mombasa (i).

Phyllodoce malmgreni Gravier, 1900
(fig. 5.2.n–p)

Phyllodoce malmgreni Gravier, 1900: 207, pl. 10 figs. 29–31, text-figs. 66–69; Day, 1957: 68.

Body slender and about 70 mm. long. Colour green, often with a dark median stripe. Prostomium (fig. 5.2.o) cordate; occipital papilla absent. Proximal part of proboscis covered with irregularly arranged papillae, the distal part with six rugose ridges. First tentacular segment not visible dorsally, the second and third distinct and separate. Tentacular cirri very long and cylindrical. Third tentacular segment with a small setigerous lobe and setae, the formula being $1 + 0^{1}_{i} + S^{1}_{S}$. Dorsal cirri (fig. 5.2.p) broadly rhomboidal or asymmetrically truncate. Setigerous lobes bluntly rounded. Ventral cirri pointed and longer than the setigerous lobes. Setae numerous with oval, striated shaft-heads and strongly tapered blades (fig. 5.2.n).

Type locality: Red Sea.

Records: Mocambique (26/32/i, 23/35/e) – a few specimens.

Distribution: Red Sea (i); India (i).

Phyllodoce (*Paranaites*) *capensis* Day, 1960
(fig. 5.2.q–s)

Phyllodoce (*Anaites*) *capensis* Day, 1960: 298, fig. 5 a–c.

Body rather broad and short, about 35 mm. long and pale in alcohol. Prostomium (fig. 5.2.r) rounded in front and with a median lobe posteriorly which bears the occipital papilla. Eyes large and partly covered by a shield formed by the first and second tentacular segments which are fused and extend forward to cover the sides of the head. Third tentacular segment separate and distinct. All tentacular cirri cylindrical and tapered. Third tentacular segment with a setigerous lobe and setae, the formula being $1 + 0^{1}_{i} + S^{1}_{ss}$. Basal part of proboscis, smooth apart from 4–5 lateral papillae, distal part with six rows of large square papillae. Dorsal cirri (fig. 5.2.q) broadly cordate. Setigerous lobes bluntly rounded apically. Ventral cirri oval and slightly longer than the setigerous lobes. About 12 setae per parapodium with asymmetrically toothed shaft-heads and long, finely serrated blades (fig. 5.2.s).

Type locality: False Bay, South Africa.

Record: Cape (34/18/s) – a few specimens.

Phyllodoce tubicola Day, 1963
(fig. 5.3.a–c)

Phyllodoce tubicola Day, 1963a: 392, fig. 3 a–c.

Body about 30 mm. long, very slender and sometimes encased in a delicate, transparent and closely ringed tube. Prostomium (fig. 5.3.a) longer than broad with marked postero-lateral lobes and a small posterior notch containing a very small occipital papilla. Proximal part of proboscis covered with irregularly arranged papillae, distal half with rugose ridges. First tentacular segment not visible dorsally, the second and third distinct and separate. Tentacular cirri all extremely long and cylindrical, the longest being D2 which reaches back to setiger 8. A few setae present on the third tentacular segment, the formula being $1 + 0^{1}_{i} + S^{1}_{ss}$. Dorsal cirri (fig. 5.3.b) bluntly cordate anteriorly but longer and almost hastate posteriorly. Setigerous lobe with a bluntly rounded apex. Ventral cirri tapered and pointed, much longer than the setigerous lobes. Setae (fig. 5.3.c) with oval striated shaft-heads and long, tapering blades.

Type locality: Agulhas Bank, South Africa.

Records: Cape (33/17/d, 34/18/s, 34/23/s, 36/21/d) – a few specimens.

Distribution: Endemic.

Phyllodoce (*Genetyllis*) *castanea* (Marenzeller, 1879)
(fig. 5.3.d–)

Carobia castanea Marenzeller, 1879: 127; Izuka, 1912: 199, pl. 21 fig. 3.
Genetyllis castanea: Bergström, 1914: 158, fig. 53, pl. 3 fig. 4.

Body short (less than 25 mm. long), rusty red in colour. Prostomium (fig. 5.3.d) rounded to oval, broader than long. No occipital papilla. Tentacular segments separate from the prostomium, but the first often fused to the second and only the third always separate and distinct dorsally. Proboscis slender and covered with small irregularly arranged papillae. All tentacular cirri short and spindle-shaped. Both the second and the third tentacular segment with setae, the formula being $1 + S^{1}_{i} + S^{1}_{N}$. Dorsal cirri (fig. 5.3.e) cordate and reddish. Setigerous lobes bluntly rounded apically. Ventral cirri oval. Setae (fig. 5.3.f) few, with long shafts ending in truncate and strongly striated shaft-heads; blades short and dagger-like.

Type locality: Southern Japan.

Records: South West Africa (22/15/s); Cape (33/18/s and 34/19/i to 34/22/s); Natal (29/31/i to 28/32/i); Mocambique (24/34/s) and Madagascar (s) – fairly common.

Distribution: Red Sea (i), Indian Ocean (i, s) and Pacific from N. Japan to Campbell Is. (s) and Chathan Is. (d).

Phyllodoce schmardai Day, 1963
(fig. 5.3.g–j)

Phyllodoce schmardaei Day, 1963a: 392, fig. 2 f–h.
Phyllodoce macrophthalma: Day (non Schmarda), 1960: 297.

Body green, up to 30 mm. long and rather broad. Prostomium (fig. 5.3.h) cordate with large eyes and a small occipital papilla. Proximal half of proboscis lightly papillose, distal half with six rugose ridges. First tentacular segment not visible dorsally, the second and third distinct and separate. All tentacular cirri cylindrical and fairly long. Setae present on tentacular segments 2 and 3, the formula being $1 + S^{1}_{i} + S^{1}_{N}$. Dorsal cirri (fig. 5.3.g) cordate, as broad as long anteriorly but longer, almost hastate posteriorly. Setigerous lobes bluntly rounded. Ventral cirri broad basally and distally pointed but not longer than the setigerous lobes. Setae (fig. 5.3.j) with oval, distally striated shaft-heads and rather short blades.

Type locality: False Bay, South Africa.

Records: Cape (34/18/i, 34/22/s) – a few specimens.

Distribution: Doubtful (synonymy confused).

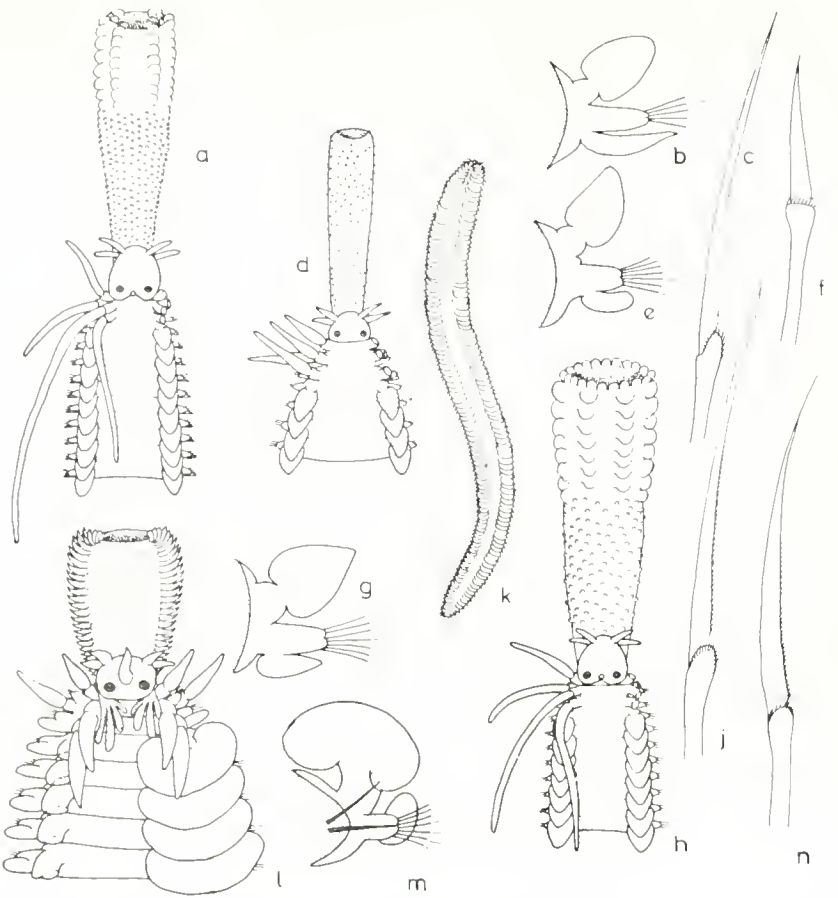

FIG. 5.3. *Phyllodoce tubicola*. (A) Head with proboscis extruded. (B) Foot. (C) Seta. *Phyllodoce cavtanea*. (D) Head with proboscis partly extruded. (E) Foot. (F) Seta. *Phyllodoce schmardai*. (G) Foot. (H) Head with proboscis extruded. (J) Seta. *Notophyllum splendens*. (K) Entire worm (twice natural size). (L) Head with proboscis partly extruded. (M) Foot. (N) Seta.

NOTOPHYLLUM Oersted, 1843

Body broad and rather short. Prostomium with two pairs of frontal antennae and a median dorsal one. One pair of eyes. A pair of simple or multidigitate nuchal organs posteriorly. Proboscis diffusely papillose. Three tentacular segments bearing four pairs of tentacular cirri according to the formula $1 + S_1^1 + S_N^1$. Dorsal

cirri large, reniform and imbricating. Parapodia biramous with an aciculum in the notopodium and sometimes simple setae as well. Neurosetae compound and spinigerous.

Type species: *Phyllodoce foliosa* Sars, 1835.

Key to Species

1	Nuchal organs as simple digitiform lobes	***N. foliosum****
–	Nuchal organs as multigitate lobes	***N. splendens***

Notophyllum splendens (Schmarda, 1861)
(fig. 5.3.k–n)

Macrophyllum splendens Schmarda, 1861: 82.
Notophyllum splendens: Day, 1953: 408, fig. 2 h–k.

Body (fig. 5.3.k) short and broad, seldom exceeding 40 mm. in length but more than 3 mm. wide. Colour usually green. Prostomium (fig. 5.3.l) rounded with large eyes and stout antennae. Proboscis stout with a series of close-set lamellae laterally and transverse ridges dorsally and ventrally. Large nuchal epaulettes with two to four finger-like lobes arise from the posterior margin of the prostomium. First tentacular segment not visible dorsally. Tentacular cirri short. Tentacular formula: $1 + S_1^1 + S_N^1$. Notopodia of body segments (fig. 5.3.m) reduced to stout cirrophores each containing an aciculum but bearing no setae. Dorsal cirri large, reniform and overlap so as to cover most of the dorsum. Neuropodia smaller and lateral. Setae (fig. 5.3.n) with spinulose shaft-heads. Ventral cirri oval and attached to the posterior faces of the neuropodia.

Type locality: Table Bay, South Africa.

Records: South West Africa (26/15/s and 28/16/s) to the Cape (34/18/i, s) – not uncommon.

Distribution: Indo-Pacific (i, s); Red Sea (i).

EULALIA Savigny, 1818

Body elongate. Prostomium rounded to cordiform with two pairs of frontal antennae and a median dorsal one. Proboscis either smooth or covered with soft papillae. Four pairs of tentacular cirri arising from the first three segments which may be fused to the prostomium or to one another. Setae often present on the second and third segments. Dorsal and ventral cirri foliaceous. Parapodia uniramous with a bilobed presetal lip. Setae compound and spinigerous.

Type species: *Nereis viridis* Linnaeus, 1767.

Key to Species

1 Setae absent from all three tentacular segments. Formula $1 + 0^{1}_{i} + 0^{1}_{N}$. (A cushion-shaped lobe occupying a posterior excavation in the prostomium)
E. (*P.*) ***macroceros*** (p. 152)
– Setae on the third tentacular segment only; formula $1 + 0^{1}_{i} + S^{1}_{N}$ 2
Setae on both the second and third tentacular segments; formula $1 + S^{1}_{i} + S^{1}_{N}$. 4
2 Body yellowish with three rows of spots. A few setae with swollen shaft-heads and short blades . . . . . ***E. trilineata*** (p. 152)
– Body uniformly green. Setae numerous 3
3 Head very small . . . . . ***E. microcephala****
– Head normal in size . . . . . ***E. capensis*** (p. 154)
4 Body yellowish with two stripes. Proboscis with crowded, conical papillae. Setigerous lobes blunt . . . . . ***E. bilineata*** (p. 154)
– Body green; proboscis quite smooth. Setigerous lobes blunt . . ***E. sanguinea*** (p. 155)
– Body green; proboscis with minute papillae. Setigerous lobes pointed . ***E. falsa*** (p. 155)

Eulalia* (*Pterocirrus*) *macroceros (Grube, 1860)
(fig. 5.4.a–c)

Phyllodoce (*Eulalia*) *macroceros* Grube, 1860: 82.
Eulalia (*Pterocirrus*) *macroceros*: ? Fauvel, 1923: 167, fig. 60 d–g; Day, 1960: 301, fig. 5 g–i.
Eulalia (*Pterocirrus*) ? *macroceros*: Day, 1953: 411.
(Non) *Sige macroceros*: Bergstrom, 1914: 136, text-fig. 40.

Body rather broad, usually greenish; length up to 20 mm. Prostomium (fig. 5.4.a) cordate with a posterior excavation occupied by a brownish swelling of the first setiger. Two large eyes, five long antennae, the median being the longest and well forward in front of the eyes. Proboscis not seen everted; when dissected it appears to have large fibrillar lamellae. The first tentacular segment fused to the prostomium but the second and third distinct. Tentacular cirri cylindrical except for V2 which has a foliaceous inferior margin; formula $1 + 0^{1}_{i} + 0^{1}_{N}$. Dorsal cirri (fig. 5.4.b) elongate-cordate; ventral cirri pointed. Setigerous lobes long with the superior part of the presetal lip produced and pointed. Setae (fig. 5.4.c) long with markedly striate shaft-heads and long blades.

Type locality: Adriatic.

Records: Cape (34/22 i, s) – rare.

Distribution: Mediterranean (s); Morocco (s, d); Senegal (s).

Eulalia trilineata Saint Joseph, 1888
(fig. 5.4.d–f)

Eulalia trilineata Saint Joseph, 1888: 292, pl. 12 fig. 162; Fauvel, 1923: 162, fig. 57 m; Day, 1953: 410; Day, 1960: 305.

Body up to 20 mm. long, slender and yellowish green with a dark median spot and two lateral ones on each segment forming three lines along the back. Median antenna arising in advance of the eyes. Tentacular segments (fig. 5.4.d) all distinct with setae on the third. Tentacular cirri rounded in section except V2 which is

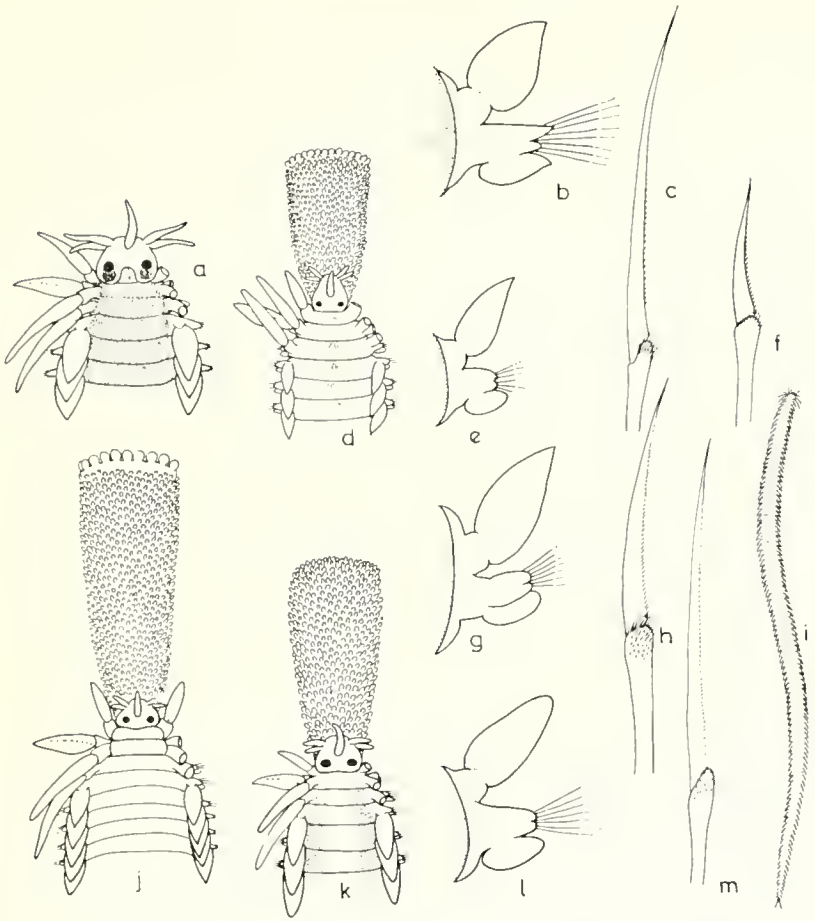

Fig. 5.4. *Eulalia macroceros*. (A) Head. (B) Foot. (C) Seta. *Eulalia trilineata*. (D) Head with proboscis partly everted. (E) Foot. (F) Seta. *Eulalia capensis*. (G) Foot. (H) Seta. (I) Entire worm (natural size). (J) Head and everted proboscis. *Eulalia bilineata*. (K) Head with proboscis partly everted. (L) Foot. (M) Seta.

somewhat flattened; tentacular formula $1 + 0_{i}^{1} + S_{N}^{1}$. Proboscis densely covered with small, irregularly arranged, conical papillae. Dorsal cirri (fig. 5.4.c) lanceolate. Ventral cirri ovoid, slightly longer than the blunt setigerous lobes. Setae (fig. 5.4.f) few, with markedly swollen, lightly serrated shaft-heads and very short serrated blades.

Type locality: France.

Records: Cape (from 32/18/s and 34/18/i to 31/29/i) – several specimens.

Distribution: North Sea; English Channel (s); Ireland (i, s).

Eulalia (*Steggoa*) *capensis* Schmarda, 1861
(fig. 5.4.g–j)

Eulalia capensis Schmarda, 1861: 86.
Eulalia viridis var. *capensis*: McIntosh, 1904: 34; Augener, 1918: 177, pl. 3 fig. 48; Day, 1953: 410.

Body (fig. 5.4.i) uniformly green, up to 80 mm. long. Prostomium (fig. 5.4.j) large and cordate with a pair of large eyes and five short antennae, the median arising slightly anterior to the eyes. Proboscis densely covered with small papillae and ending with 18 large soft papillae. The three tentacular segments are distinct. Tentacular cirrus V2 definitely flattened and the second segment lacks a setigerous lobe or setae, the tentacular formula being $1 + 0^{1}_{i} + S^{1}_{N}$. Each body segment has a hastate, almost symmetrical dorsal cirrus (fig. 5.4.g), a rather truncate setigerous lobe with the notched presetal lip obviously longer than the smoothly rounded postsetal lip. Ventral cirrus ovoid and subequal to the setigerous lobe. Setae (fig. 5.4.h) with denticulate shaft-heads and rather short, serrated blades.

Type locality: Table Bay (South Africa).

Records: South West Africa (22/14/i) to the southern Cape (34/18/i, s and 34/23/i) – common under stones.

Distribution: Endemic.

Eulalia (*Hypoeulalia*) *bilineata* (Johnston, 1840)
(fig. 5.4.k–m)

Phyllodoce bilineata Johnston, 1840: 227, pl. 6 fig. 7–10.
Hypoeulalia bilineata: Bergstrom, 1914: 165, fig. 57.
Eulalia (*Hypoeulalia*) *bilineata*: Day, 1960: 300, fig. 5d–f.

Body slender up to 20 mm. long for 155 segments. Colour yellowish with two dark green stripes just above the parapodia. Prostomium (fig. 5.4.k) rounded in front, straight posteriorly. Frontal antennae well developed, median antenna well in advance of the large eyes. Proboscis densely covered with small conical papillae. First segment free from the prostomium but reduced. Second and third segments distinct. Dorsal tentacular cirri rounded but V2 flattened. Setae and setigerous lobes on second and third segments. Tentacular formula $1 + S^{1}_{i} + S^{1}_{S}$. Dorsal cirri (fig. 5.4.l) bluntly hastate. Presetal lip notched, ends rounded. Ventral cirrus ovoid. Setae (fig. 5.4.m) 12–16 per parapodium with ovate shaft-heads striated distally and lightly serrated blades of normal length.

Type locality: Coast of England.

Records: Cape (33/17/s, 34/18/s, 34/22/s, 32/28/s) – common in some dredgings.

Distribution: North Atlantic from Greenland (s, d), North Carolina and Europe (i, s) to Mediterranean; Arctic and North Pacific from Japan (d) to S. California (s).

Eulalia (*Eumida*) *sanguinea* Oersted, 1843
(fig. 5.5.a–c)

Eulalia sanguinea Oersted, 1843: 28.
Eumida sanguinea: Bergström, 1914: 131, fig. 37.
Eulalia (*Eumida*) *sanguinea:* Fauvel, 1923: 166, fig. 59 f–k.

Body 30–60 mm. long and rather swollen; colour very variable. Prostomium (fig. 5.5.a) cordiform with two large eyes, four rather long antennae anteriorly and a fifth inserted in front of the eyes and extending beyond the tip of the prostomium. Proboscis with a few obscure papillae. The first tentacular segment fused to the protstomium, the second and third distinct and setigerous. Tentacular cirrus V2 somewhat flattened, formula: $1 + S^{01}_{a1} + S^{01}_{aN}$. Dorsal cirri (fig. 5.5.b) cordate, as long as broad and borne on stout cirrophores. Ventral cirri ovoid, shorter than the blunt setigerous lobes. Setae (fig. 5.5.c) with oval striated shaft-heads and tapered blades.

Type locality: Denmark.

Records: Cape coasts from 32/18/i, s to 34/25/s; Mocambique (24/34/s) and Madagascar (s) – not uncommon.

Distribution: Cosmopolitan in temperate and tropical seas (i, s, d).

Eulalia (*Sige*) *falsa* Day, 1960
(fig. 5.5.d–f)

Eulalia (*Sige*) *falsa* Day, 1960: 303, fig. 6 a–c.

Body about 20 mm. long; pale brown in alcohol. Prostomium (fig. 5.5.d) cordate, frontal antennae subulate, median antenna short and in front of the large eyes. First tentacular segment fused to the prostomium dorso-laterally. Second and third segments distinct. Dorsal tentacular cirri cylindrical and long but V2 flattened. Second tentacular segment with a few setae ; third segment with a setigerous lobe and setae. Formula $1 + S^{1}_{i} + S^{1}_{N}$. Proboscis with six ridges and very poorly marked papillae. Dorsal cirri (fig. 5.5.e) elongate-cordate. Setigerous lobe with a presetal lip which is long, pointed and deeply notched. Ventral cirrus pointed but shorter than the setigerous lobe. Setae (fig. 5.5.f) numerous with shaft-heads very slightly expanded and bearing three to four small denticles at the apex; blades fairly long.

Type locality: False Bay (South Africa).

Records: Cape coasts from 33/17/s, d to 33/27/s – a few specimens.

Distribution: Endemic.

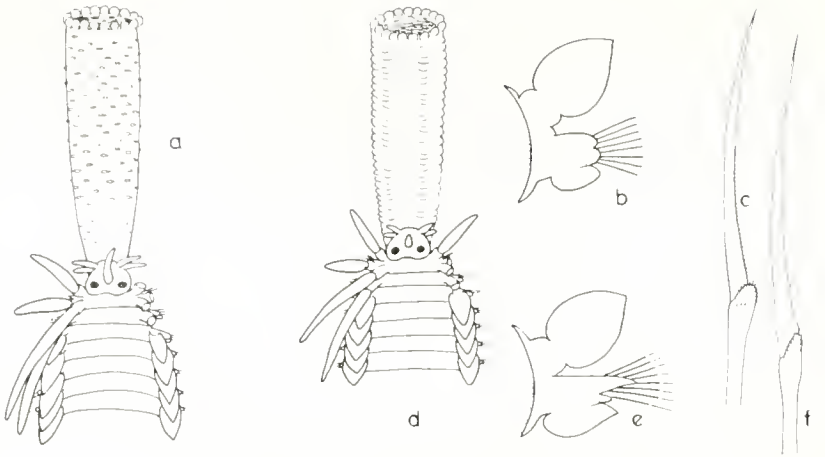

Fig. 5.5. *Eulalia sanguinea.* (A) Head. (B) Foot. (C) Seta.
Eulalia falsa. (D) Head. (E) Foot. (F) Seta.

Subfamily **LOPADORHYNCHINAE** Claparède, 1868

Entirely planktonic. Body small and rather flattened. Prostomium broad with four antennae, no palps and poorly developed eyes. Proboscis unarmed and seldom everted. Two to three tentacular cirri on the first one or two segments which may lack setae. Parapodia uniramous with dorsal and ventral cirri. Setae mainly compound.

Records from southern Africa

Lopadorhynchus appendiculatus Southern . . . —Cp
Lopadorhynchus (*Prolopadorhynchus*) *henseni* Reibisch . —Cp
Lopadorhynchus (*Prolopadorhynchus*) *nationalis* Reibisch . —Cp
Lopadorhynchus krohni (Claparède) 49Cp
as *Lopadorhynchus krohni* var. *simplex* Monro . . 33Cp
Lopadorhynchus uncinatus Fauvel . . . . —Cp
Maupasia caeca Viguier . . . . . —Cp, Np
Maupasia gracilis (Reibisch) . . . . . —Cp
Pedinosoma curtum Reibisch . . . . . —Cp, Np, Pp
Pelagobia longicirrata Greeff . . . . . 21Np, 49Cp, Wp, Cp, Np

BIOLOGICAL NOTES

Practically nothing is known of the biology of this group. Apart from *Pelagobia longicirrata*, they are rare in plankton samples and neither this species nor any other

has ever been found with recognisable food in its gut. Certainly they do not feed on phytoplankton.

THE MAIN DIAGNOSTIC CHARACTERS

Useful references regarding this group will be found in Greeff (1879), Reibisch (1893 and 1895) and Southern (1909). Revised descriptions are given by Stop-Bowitz (1948) and a valuable key by Dales (1957). The important characters are similar to those of the *Phyllodocinae* but basically similar.

The Prostomium and Proboscis are of minor importance.

The First Three Segments. These are of major importance.

The same tentacular formula that was used for the *Phyllodocinae* (see p. 138) may be applied here. The modification of the normal lamellar cirri to form elongate and cylindrical tentacular cirri is usually limited to the first segment behind the head but may be continued over two segments e.g. (*Maupasia*). In *Lopadorhynchus*, however, there is an additional complication for there is a vertical series of three not two tentacular cirri on the first segment. The inferior one though minute appears to be consistently present and in *L. brevis* it is well developed. These tentacular cirri are best represented in the tentacular formula as $\frac{1}{1}$. In the *Phyllodocinae* the presence of two tentacular cirri on a single segment is obviously due to the modification of the dorsal and ventral cirri of that segment but the presence of three is more difficult to understand. It seems possible that the middle cirrus is a modified setigerous lobe but the fact that it has a cirrophore like those of the superior and inferior cirri makes this explanation unlikely.

Dorsal or ventral cirri may also be lacking from the next two or three segments. In *Lopadorhynchus* the presence or absence of ventral cirri from setigers 1–2 or 1–3 is difficult to observe as these cirri may be folded against the postsetal lobe and partially covered by a flange of the broad presetal lamella. The shape of subsequent dorsal and ventral cirri is also of taxonomic importance but as these structures are soft and liable to shrinkage or bloating according to the method of fixation and preservation, only major differences in shape are reliable.

Setae. Again it is the setae of the first few segments that are most important. Only normal, compound, spinigerous setae are present on the tentacular segments of *Pelagobia* and *Maupasia* though simple setae have been described where the blade has fallen off. In *Lopadorhynchus* the first two or three setigers behind the tentacular segment have short, stout, curved acicular setae which are easily distinguished from the shafts of the compound setae.

In some species the distal part of the shaft and the edge of the blade is serrated or denticulate on one side. When observing this character it is important that the seta be viewed in full lateral view; if the setae are even slightly rotated they may appear smooth.

Key to Genera

1 Tentacular segments without setae 2
– Tentacular segments with setae 3

2 Two tentacular cirri on the first segment (formula 0^{1}_{1}). Next two to three segments normal with compound setae (fig. 5.6.a) . . . . . ***PEDINOSOMA*** (p. 158)

– Two to three tentacular cirri on the first segment (formula $0^{1}_{\overline{1}}$). Next two to three segments modified with curved acicular setae (fig. 5.6.d) . ***LOPADORHYNCHUS*** (p. 158)

3 Two tentacular cirri on the first segment (formula S^{1}_{1}.) Next segment without a dorsal cirrus (fig. 5.7.h) . . . . . ***PELAGOBIA*** (p. 163)

– Three tentacular cirri on two segments (formula $S^{1}_{1} + S^{1}_{N}$). Next segment with a dorsal cirrus (fig. 5.7.j) . . . . . ***MAUPASIA*** (p. 164)

PEDINOSOMA Reibisch, 1895

Body small and flattened with few segments. Four antennae. Proboscis short with three glands. Two pairs of tentacular cirri but no setae on the first segment (formula O^{1}_{1}). All subsequent parapodia with cordate dorsal cirri, conical setigerous lobes and lanceolate ventral cirri. Setae all fine and compound.

Type species: *Pedinosoma curtum* Reibisch, 1895.

Pedinosoma curtum Reibisch, 1895
(fig. 5.6.a–c)

Pedinosoma curtum Reibisch, 1895: 27, pl. 2 fig. 17, pl. 3 figs. 1–4; Fauvel, 1923: 188, fig. 70 c–f.

Body (fig. 5.6.a) broad and flattened, only 2 mm. long with seven to eight setigers. Prostomium curved in front with two pairs of subequal antennae. Eyes not obvious. A pair of lateral nuchal organs. The first or tentacular segments bears two pairs of tapered tentacular cirri of which the ventral is slightly longer and exceeds the width of the segment. Body segments (fig. 5.6.b) have bilabiate setigerous lobes, swollen cordate dorsal cirri and tapered ventral cirri which are longer than the setigerous lobes. Setae (fig. 5.6.c) are heterogomph spinigers with pointed shaft-heads and long blades.

Type locality: Azores.

Records: S.E. Atlantic (34 17 p); Agulhas Current (from 30 32 p to 35 22 p) – 12 stations; Mocambique Current (12 47 p); S.W. Indian Ocean (33 33 p, 39 38 p).

Distribution: Warm North Atlantic; North Pacific.

LOPADORHYNCHUS Grube, 1850

Body broad and flattened. Four antennae. Two to three tentacular cirri but no setae on the first segment which has the three cirri in a vertical series (formula $0^{1}_{\overline{1}}$). Proboscis with three glands. Segments 2, 3 and sometimes 4 are stout, have acicular setae and may lack ventral cirri. Each body segment with a foliaceous dorsal cirrus, a setigerous lobe with a rounded presetal lamella, numerous compound setae and sometimes a few simple acicular ones. Ventral cirri often subulate.

Type species: *Lopadorhynchus brevis* Grube, 1850.

Key to Species

1 Compound setae start on setiger 3 2
– Compound setae start on setiger 4. (One to two acicular setae persist to the fourth foot or later) 5
2 Setigers 1 and 2 without ventral cirri in the adult. Fourth and later setigers with or without an acicular seta among the compound forms 3
— Setigers 1 and 2 with ventral cirri partially fused to the inferior margins of the setigerous lobes. Fourth and later setigers without acicular setae among the compound forms . 4
3 Only compound setae after the third foot. (Setigers 1 and 2 with a collar-like expansion at the base of the setae) . . . . . ***L. uncinatus*** (p. 159)
– Compound setae accompanied by one inferior acicular setae in the fourth and subsequent feet . . . . . ***L. krohni*** (p. 159)
4 Ventral cirri with long filiform tips . . . . . ***L. appendiculatus*** (p. 161)
— Ventral cirri without filiform tips . . . . . ***L. henseni*** (p. 161)
5 Setigers 1–3 without ventral cirri . . . . . ***L. brevis*** (p. 162)
– Setigers 1–3 with ventral cirri partially fused to the inferior margins of the setigerous lobes ***L. nationalis*** (p. 162)

Lopadorhynchus uncinatus Fauvel, 1915
(fig. 5.6.d–h)

Lopadorhynchus uncinatus Fauvel, 1915: 3, fig. 2; Fauvel, 1923: 184, fig. 67; Dales, 1957: 101, figs. 1–5.

Body (fig. 5.6.g) up to 25 mm. long, but usually 12 mm. with 25–32 setigers. First segment with three pairs of antennae in a vertical series; the middle and upper ones slightly longer than the prostomium is broad, the lowest one minute. Setigers 1 and 2 (fig. 5.6.d) stout with stout acicular setae (fig. 5.6.h) each with a conical setigerous lobe and a rounded presetal lamella, a small conical dorsal cirrus and a more pointed ventral cirrus. The setae (fig. 5.6.e) are all compound with a pointed shaft-head and the base of the blade is denticulate on one side.

Type locality: Azores and Mediterranean.

Records: S.E. Atlantic (32/13/p and 34/16/p).

Distribution: Warm North and South Atlantic; Mediterranean; off California.

Lopadorhynchus* (*Lopadorhynchus*) *krohni (Claparède, 1870)
(fig. 5.6.i–k)

Hydrophanes krohnii Claparède, 1870: 464, pl. 9 fig. 2.
Lopadorhynchus krohnii: Fauvel, 1923: 185, fig. 68 a–d.

Body rather broad, up to 4 mm. long with 35 setigers. Prostomium broader than long. Superior antennae almost twice as long as the inferiors but still only one third of body width. Proboscis eversible with three digitiform papillae. Three pairs of tentacular cirri on the first segment in a vertical series, the upper two subequal and two-thirds the body width while the lowest one is a minute papilla. First two

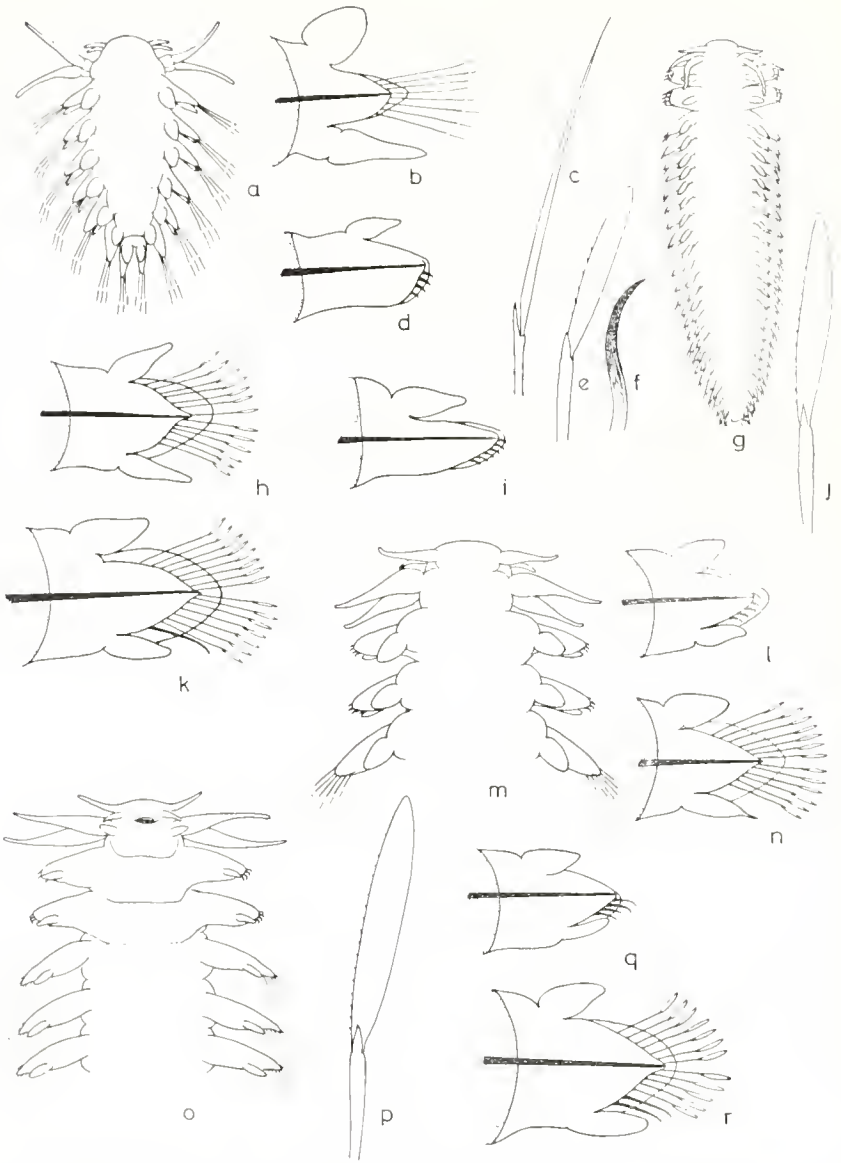

FIG. 5.6. *Pedinosoma curtum*. (A) Entire worm (20 times natural size). (B) Posterior view of foot. (C) Seta. *Lopadorhynchus uncinatus* (modified from Fauvel, 1915). (D) Second foot. (E) Compound seta. (F) Simple hook from second foot. (G) Entire worm (dorsal view, three times natural size). (H) Tenth foot. *Lopadorhynchus krohni*. (I) Second foot. (J) Compound seta. (K) Seventh foot. *Lopadorhynchus appendiculatus*. (L) Second foot. (M) Dorsal view of anterior end. (N) Tenth foot. *Lopadorhynchus henseni*. (O) Ventral view of anterior end. (P) Compound seta. (Q) Second foot. (R) Seventh foot.

setigers (fig. 5.6.i) shorter and stouter than subsequent ones and lack ventral cirri. Ventral cirri present from setiger 3. Each parapodium in the middle of the body (fig. 5.6.k) has a conical setigerous lobe with a rounded presetal lamella, an ovoid dorsal cirrus and a longer ventral cirrus. Simple acicular setae up to setiger 4–7; compound setae start in setiger 3 and have pointed shaft-heads and denticulate blades.

Type locality: Naples.

Records: S.E. Atlantic off Cape Town; Agulhas Current and S.W. Indian Ocean.

Distribution: All warm and temperate seas.

Lopadorhynchus (*Prolopadorhynchus*) *appendiculatus* Southern, 1909 (fig. 5.6.l–n)

Lopadorhynchus appendiculatus Southern, 1909: 7, pl. 2 figs. 12–13, pl. 3 figs. 14–20; Fauvel, 1923: 187, fig. 69 a–l.

Body up to 13 mm. long with 18–25 segments. Superior antennae (fig. 5.6.m) longer than the inferiors and two-thirds the prostomial width. First segment with three pairs of tentacular cirri in a vertical series, the middle and upper ones four-fifth of body width, the lowest one small. First three segments with ventral shields having lateral projections. First two setigers (fig. 5.6.l) with short parapodia having inconspicuous, hooked, acicular setae. Third setiger with long compound setae. First two parapodia with ventral cirri partially fused to the setigerous lobe. Middle parapodia (fig. 5.6.n) each with a conical setigerous lobe bearing a rounded presetal lamella, a stout dorsal cirrus and a shorter ventral cirrus with a filiform apex and an internal gland. Compound setae with broad serrated blades.

Type locality: Atlantic, west of Ireland.

Records: Agulhas Current (34/27/p); S.W. Indian Ocean (33/33/p, 35/48/p).

Distribution: North Atlantic (off Ireland, Azores and Canary Is.).

Lopadorhynchus (*Prolopadorhynchus*) *henseni* Reibisch, 1895 (fig. 5.6.o–r)

Lopadorhynchus henseni Reibisch, 1895: 35; Stop-Bowitz, 1948: 19, fig. 12 a–e.
Reibischia henseni: Bergström, 1914: 182, text-fig. 69.

Body oval, up to 5 mm. long for 20 segments. Superior antennae (fig. 5.6.o) larger than the inferiors and a quarter of the segmental width. Three pairs of tentacular cirri on the first segment in a vertical series, the upper and middle ones subequal and two-third the segmental width, the lowest a minute papilla. First two setigers (fig. 5.6.q) stouter and shorter than subsequent ones and have both ventral cirri and acicular setae only. The ventral cirri lie parallel to the inferior margin

of the setigerous lobes. Third setger with numerous compound setae. Parapodia in the middle of the body (fig. 5.6.r) each with a conical setigerous lobe with a rounded presetal lamella, a stout dorsal cirrus and a blunt subulate ventral cirrus divergent from the setigerous lobe. Compound setae (fig. 5.6.p) with pointed shaft-heads and broad blades with thickened denticulate margins.

Type locality: Central Atlantic.

Records: S.E. Atlantic (34 17/p): Agulhas Current (from 30 30/p south west to 34 26 p) – several stations.

Distribution: Central and North Atlantic.

Lopadorhynchus (*Lopadorhynchus*) *brevis* Grube, 1850
(fig. 5.7.d–e)

Lopadorhynchus brevis Grube, 1850: 306; Dales, 1957: 104, figs. 7 and 8; Tebble, 1960: 200.

Body up to 20 mm. long with 27 setigers. Prostomium (fig. 5.7.d) broader than long; superior antennae twice as long as the inferiors but still less than half body width. First segment with three pairs of tentacular cirri in a vertical series of decreasing length, the uppermost equal to the segmental width and the lowest small but well developed. The first three setigers shorter and stouter than subsequent ones; they have only simple acicular setae and lack ventral cirri. Middle parapodia (fig. 5.7.c) each with a pointed dorsal cirrus, a conical setigerous lobe with a rounded presetal lamella and a subulate ventral cirrus. Setae include a fan of compound setae and two to three inferior simple acicular setae.

Type locality: Mediterranean Sea.

Records: Not known from southern Africa.

Distribution: Mediterranean: warm South Atlantic; warm North Pacific.

Lopadorhynchus nationalis Reibisch, 1895
(fig. 5.7.a–c)

Lopadorhynchus natonialis Reibisch, 1895: 38, pl. 3 figs. 10–15.
Lopadorhynchus (*Prolopadorhynchus*) *nationalis*: Fauvel, 1923: 186, fig. 68 e–i; Stop-Bowitz, 1948: 19; Dales, 1957: 106.

Body up to 15 mm. long with 36 segments but usually only 10 mm. with 25 segments. Inferior antennae (fig. 5.7.a) only half as long as the superior pair. First segment with three pairs of tentacular cirri in a vertical series; the two superior pairs are subequal and the third, inferior pair are unusually well developed, being half the length of the superior pairs. Eyes indistinct. Setigers one to three shorter and stouter than the rest and bear only simple acicular setae. Ventral cirri of setigers 1–3 (fig. 5.7.b) are cylindrical and partly fused to the distal inferior margin behind the

setae. The fourth and each of the later body segments (fig. 5.7.c) with a stout acorn-shaped dorsal cirrus, a setigerous lobe with a rounded presetal lamella and a separate, tapered and blunt ventral cirrus. Stout curved acicular setae decrease in number after setiger 3 but 1–2 are present in middle segments. Compound setae appear in setiger 4, each with a pointed shaft-head and a blade with minute denticles extending along one margin to the rounded tip.

Type locality: Tropical Atlantic.

Records: Mocambique current (26/31/p, 26/35/p); Agulhas current (32/29/p).

Distribution: Mediterranean; tropical and subtropical Atlantic and Pacific.

PELAGOBIA Greeff, 1879

Body small and rather flattened. Four antennae. Two pairs of tentacular cirri on the first segment which also bears setae (formula S_1^1 Dorsal cirrus absent from the next segment. Later parapodia with long tapered dorsal and ventral cirri and conical setigerous lobes. Setae compound.

Type species: *Pelagobia longicirrata* Greeff, 1879.

Pelagobia longicirrata Greeff, 1879
(fig. 5.7.f–i)

Pelagobia longicirrata Greeff, 1879: 247, pl. 14 figs. 23–25; Fauvel, 1923: 192, fig. 72 a–c.

Body (fig. 5.7.f) about 5 mm. long with 20 segments. Prostomium (fig. 5.7.h) bluntly triangular with a pair of small indistinct eyes and four antennae which are slender, subequal and less than the width of the prostomium. Tentacular segment with a few setae and two pairs of tapered tentacular cirri longer than the width of the body. Second setiger without a dorsal cirrus. Later parapodia (fig. 5.7.i) each with a conical setigerous lobe and much longer, subequal, dorsal and ventral cirri. Setae (fig. 5.7.g) with asymmetrical shaft-heads having a long tooth on one side; blades toothed with faintly hooked tips. Middle parapodia often yellowish brown.

Type locality: Canary Islands.

Records: Benguela Current (22/12/p, 25/13/p, 28/14/p); S.E. Atlantic (34/12/p to 35/18/p); Agulhas Current and neritic waters of the Cape (from 29/31/p to 35/22/p – 15 stations); Mocambique Current (13/42/p to 24/39/p); S.W. Indian Ocean (28/39/p to 39/38/p).

Distribution: "Almost all explored water masses". Known depth range 50–1000 metres.

MAUPASIA Viguier, 1886

Body broad and short, usually less than 5 mm. long with 15–25 segments. Four antennae. Three pairs of tentacular cirri and setae on the first two segments (formula $S_1^1 - S_2^1$) Parapodia uniramous, each with a conical setigerous lobe and acorn-shaped to cylindrical dorsal and ventral cirri. Setae compound.

Type species: *Maupasia caeca* Viguier, 1886.

Key to Species

1	Dorsal cirri acorn- or flask-shaped (fig. 5.7.o); ventral cirri markedly tapered .	***M. caeca***
–	Dorsal cirri digitiform or subulate; ventral cirri blunt	2
2	Tentacular cirrus D2 longer than twice the body width	***M. gracilis***
–	Tentacular cirrus D2 less than twice the body width	***M. isochaeta****

Maupasia caeca Viguier, 1886
(fig. 5.7.m–o)

Maupasia caeca Viguier, 1886: 382, pl. 21 figs. 14–20; Fauvel, 1923: 190, fig. 71 a–d.

Body (fig. 5.7.n) 3–5 mm. long with about 15 segments. Prostomium square or faintly curved in front and without eyes. Two pairs of subequal antennae equal to the width of the prostomium. First tentacular segment bearing a few setae and two tapered tentacular cirri of which the dorsal is rather longer than the ventral. Second tentacular segment with a long dorsal cirrus equal to two-third the body width, a few setae and a normal ventral cirrus slightly shorter than those of the body. Middle segments (fig. 5.7.o) each with a swollen, flask-shaped dorsal cirrus, a conical setigerous lobe and a markedly tapered ventral cirrus a little longer than the dorsal one. Setae (fig. 5.7.m) with one side of the shaft-head ending in a long point and bearing a very long fine blade.

Type locality: Bay of Algiers.

Records: S.E. Atlantic (34°17′p, 34°18′p); Agulhas Current (from 29°31′p to 34°25′p) – 12 stations; Mocambique Current; S.W. Indian Ocean.

Distribution: Mediterranean; North Pacific; Subantarctic and Antarctic in warm deep water.

Maupasia gracilis (Reibisch, 1895)
(fig. 5.7.j–l)

Haliplanes gracilis Reibisch, 1897: 25, pl. 2 figs. 10–13.
? *Haliplanes magna* Southern, 1909: 5, pl. 1 fig. 6, pl. 2 figs. 7–11.

Body about 2 mm. long with 12–15 setigers. Prostomium (fig. 5.7.j) rounded in front and without eyes. Two pairs of subequal slender antennae. Nuchal collar not evident. First tentacular segment with two pairs of slender, subequal tentacular cirri shorter than the segment is broad and a few compound setae. Second tentacular

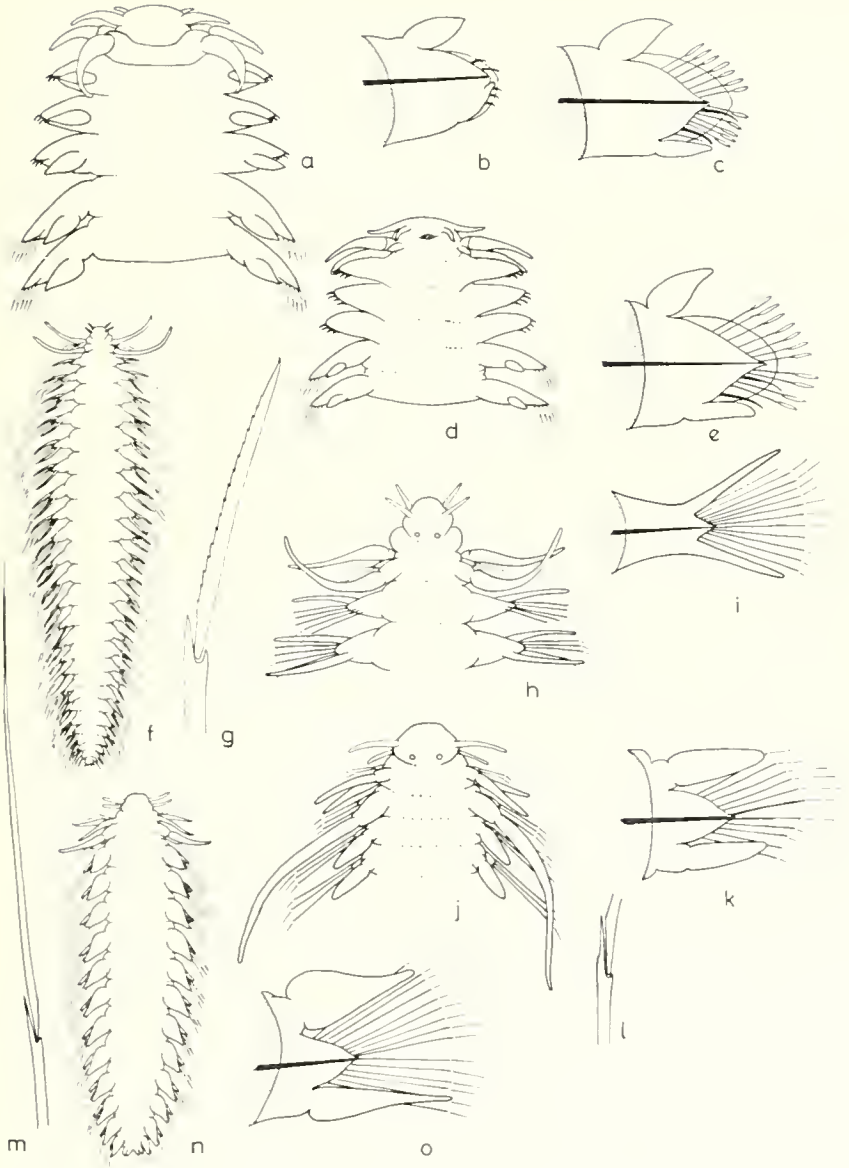

FIG. 5.7. *Lopadorhynchus nationalis*. (A) Anterior end. (B) Second foot. (C) Tenth foot. *Lopadorhynchus brevis* (modified from Dales, 1957). (D) Ventral view of anterior end. (E) Seventh foot. *Pelagobia longicirrata*. (F) Entire worm (11 times natural size). (G) Seta. (H) Head. (I) Foot. *Maupasia gracilis*. (J) Head. (K) Foot. (L) Shaft-head of seta. *Maupasia caeca*. (M) Seta. (N) Entire worm (12 times natural size). (O) Foot.

segment with a very long dorsal tentacular cirrus over twice as long as the segment is broad, a few compound setae and a normal ventral cirrus similar to those of subsequent segments. Normal body segments (fig. 5.7.k) have blunt digitiform dorsal cirri, shorter, conical setigerous lobes, and ventral cirri a little narrower than the dorsal ones. Setae (fig. 5.7.l) all compound and essentially similar though they may appear simple by the loss of the blade. Each seta has a shaft-head with one long blunt tooth with a thickened base and bears a very long slender blade. Some feet bear a seta with a much thicker shaft than the rest.

Type locality: Tropical Atlantic.

Records: Agulhas Current (32/29 p, 32/30 p, 33/28 p, 33/29 p); Mocambique Current (21/40 p).

Distribution: Tropical Atlantic; ? South Pacific.

Family **PONTODORIDAE** Bergström, 1914

Small planktonic worms with few segments and related to the Syllidae. Prostomium rounded with rudimentary palps, small eyes and one pair of slender antennae. Pharynx unarmed, papillose and followed by a muscular gizzard. Tentacular segment with two pairs of tentacular cirri with internal acicula in the lower pair. Body elongate with numerous uniramous parapodia each having an elongated setigerous lobe and small glandular dorsal and ventral cirri. Setae compound and spinigerous.

Records from southern Africa

Pontodora pelagica Greeff . . . . . —Np, Pp

PONTODORA Greeff, 1879

The single genus has the characters of the family.

Type species: *Pontodora pelagica* Greeff, 1879.

Pontodora pelagica Greeff, 1879
(fig. 6.1.a–d)

Pontodora pelagica Greeff, 1879: 245, pl. 14 figs. 19–22; Fauvel, 1923: 197, fig. 73 f–k.

Body (fig. 6.1.a) vermiform, 1–2 mm. long with up to 18 setigers. Prostomium (fig. 6.1.b) rounded with a pair of long, slender antennae and a pair of small eyes. Palps very indistinct, small and rounded. Tentacular segment short and fused to the prostomium with two pairs of long, slender tentacular cirri and internal acicula in the lower pair. Antennae and cirri not jointed. Pharynx covered with long papillae and followed by a barrel-shaped muscular gizzard. No dorsal cirrus on the first setiger. Middle parapodia (fig. 6.1.c) each with a long cirriform setigerous lobe and short, fusiform, glandular dorsal and ventral cirri and three ciliated and pedunculate papillae. Setae (fig. 6.1.d) compound with symmetrical shaft-heads and long slender serrated blades.

Type locality: Canary Islands.

Records: Agulhas Current (30/30/p); Mocambique Current (11/42/p).

Distribution: Warm North Atlantic.

Family **IOSPILIDAE** Bergström, 1914

Small elongate planktonic worms. No antennae. Prostomium rounded. Two eyes. Two minute palps. Two fused tentacular segments with two pairs of tentacular cirri and setae accompanying the second pair. The next two to ten segments with reduced parapodia. Later parapodia uniramous with short dorsal and ventral cirri, a longer setigerous lobe and compound spinigerous setae. Proboscis eversible, with or without a pair of lateral jaws.

Records from southern Africa

Iospilus phalacroides Viguier	—Cp
Phalacrophorus pictus Greeff	—Cp, Np, Pp
Phalacrophorus uniformis Reibisch	—Cp, Np, Pp

BIOLOGICAL NOTES

The genus *Iospilus* is probably not as rare as the number of published records would suggest for it is easily mistaken for the larva of some benthonic form such as a spionid. This is mainly because it is one of the few holoplanktonic polychaetes which feeds on diatoms. The other genus *Phalacrophorus* which has enormous jaws is quite obviously a predator. All iospilids have well marked branching chromatophores and are probably phosphorescent in life.

KEY TO GENERA

1 Proboscis unarmed . . . . . ***IOSPILUS***
– Proboscis with a pair of long chitinous jaws . . . . . ***PHALACROPHORUS***

IOSPILUS Viguier, 1886
(including *PARIOSPILUS* Viguier, 1911)

Prostomium rounded, without antennae but with a pair of eyes. Two minute ventral palps on the outer edges of the mouth. Proboscis unarmed; two pairs of small tentacular cirri on the first two fused segments of which the first is achaetous and the second bears setae according to the formula $1 + S^{1}_{0}$. Dorsal and ventral cirri of segments 3 and 4 rudimentary but small setigerous lobes and setae present. Segment 5 and succeeding segments with fully developed parapodia having small lamellar dorsal and ventral cirri and a long setigerous lobe bearing compound setae. Pygidium glandular, without anal cirri.

TYPE SPECIES: *Iospilus phalacroides* Viguier, 1886

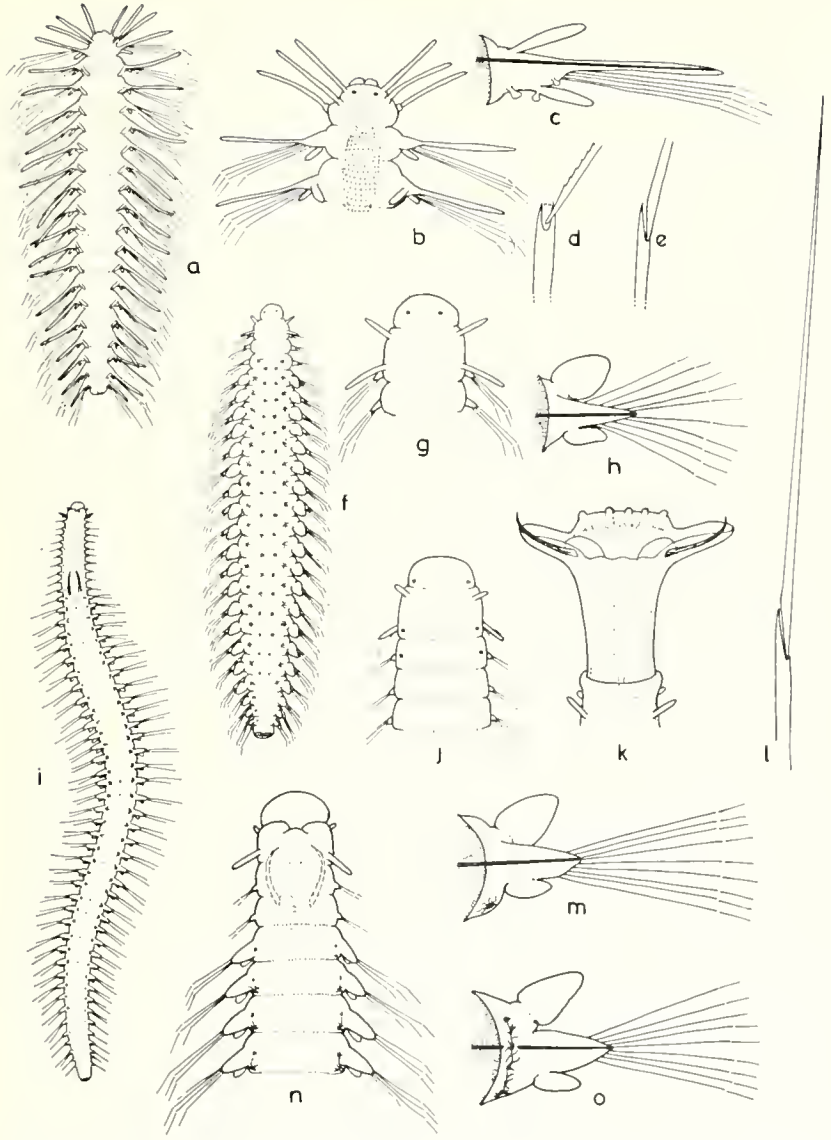

FIG. 6.1. *Pontodora pelagica*. (A) Entire worm (30 times natural size). (B) Head. (C) Foot. (D) Setal shaft-head and base of blade. *Iospilus phalacroides*. (E) Setal shaft-head and base of blade. (F) Entire worm (dorsal view, 15 times natural size). (G) Head. (H) Foot. *Phalacrophorus uniformis*. (I) Entire worm (ventral view showing chromatophores, 10 times natural size. (J) Dorsal view of head. (K) Everted proboscis. (L) Seta. (M) Foot. *Phalacrophorus pictus*. (N) Ventral view of anterior end. (O) Posterior view of foot showing chromatophores.

Iospilus phalacroides Viguier, 1886
(fig. 6.1.e–h)

Iospilus phalacroides Viguier, 1886: 392, pl. 23 figs. 1–6; Fauvel, 1923: 194, fig. 72 e.
Pariospilus affinis Viguier, 1911: 250; Fauvel, 1923: 194, fig. 73 a–e.

Body (fig. 6.1.f) up to 5 mm. long with about 20 segments and roughly cigar-shaped with blunt ends. Colour brownish, not translucent with two to four rows of star-shaped chromatophores on the dorsum. Prostomium (fig. 6.1.g) rounded anteriorly and broader than long with a pair of indistinct eyes. A pair of minute palps ventrally on the outer edges of the mouth. Proboscis muscular with lobed lips but unarmed. First segment with a pair of small cylindrical tentacular cirri but no setae. Second segment fused to the first and bears a longer pair of tentacular cirri accompanied by a few setae. Segments 3 and 4 each with a small setigerous lobe and setae and rudimentary dorsal and ventral cirri which are difficult to see. Subsequent parapodia fully formed and gradually increase in size to the eighth. Each parapodium (fig. 6.1.h) has a cordate, rather swollen dorsal cirrus, a longer, conical setigerous lobe and a smaller ventral cirrus. Setae all compound and spinigerous with slender shafts ending in pointed shaft-heads (fig. 6.1.e) and slender sword-like blades. Pygidium broader than long, glandular and without appendages.

Type locality: Bay of Algiers

Records: Benguela Current (32/16 p); Agulhas Current and inshore waters (from 32/30 p to 35/23/p – six stations); S.W. Indian Ocean (33/33/p).

Distribution: Mediterranean; S. Pacific.

PHALACROPHORUS Greeff, 1879

Body elongate, cylindrical and transparent. Prostomium small, rounded and without antennae but with a pair of small palps ventrally. Proboscis large, eversible and armed with a pair of long curved and pointed jaws. Two pairs of small tentacular cirri on the first two segments of which the second bears setae giving the formula $1+S_0^1$ The next few segments have reduced parapodia but thereafter each parapodium has ovoid dorsal and ventral cirri and a conical setigerous lobe bearing compound spinigerous setae. Pygidium glandular, without appendages.

Type species: *Phalacrophorus pictus* Greeff, 1879.

Key to Species

1 First two to three parapodia rudimentary (fig. 6.1.n) . . . . . ***P. pictus***
– First eight to ten parapodia rudimentary. . . . . ***P. uniformis***

Phalacrophorus pictus Greeff, 1879
(fig. 6.1.n–o)

Phalacrophorus pictus Greeff, 1879: 249, pl. 14 figs. 26–30; Fauvel, 1923: 196, fig. 72 f.

Body cylindrical, up to 6 mm. long for 30 segments. Prostomium (fig. 6.1.n) rounded in front with two eyes and a pair of minute palps. Proboscis large and eversible, with a lobed margin and a pair of chitinous pointed jaws. The first tentacular cirrus is a mere dorsal papilla, the second longer, ventral and digitiform. According to Fauvel it is accompanied by a few setae but none were seen. Parapodia and setae of segments 3 and 4 poorly developed. From segment 5 onwards the parapodia and setae are all equally large, each (fig. 6.1.o) with a well developed conical setigerous lobe, a bluntly triangular dorsal cirrus and a smaller ventral cirrus. Segmental chromatophores ventral to the parapodia. They are not developed in juveniles but in the adults branching chromatophores develop on and between the parapodia. Setae slender with long pointed shaft-heads and slender blades.

Type locality: Canary Islands.

Records: S.W. Atlantic (32/16/p, 34/17/p); Agulhas Current (from 30/31/p to 35/26/p – seven stations); Mocambique Current (11/42/p, 21/37/p); S.W. Indian Ocean (32/36/p, 34/39/p, 39/38/p).

Distribution: Temperate and tropical Atlantic, Pacific and Mediterranean.

Phalacrophorus uniformis Reibisch, 1895
(fig. 6.1.i–m)

Phalacrophorus uniformis Reibisch, 1895: 15, pl. 1 figs. 10–16; Fauvel, 1923: 196, fig. 72 g–h.

Body (fig. 6. 1.i) cylindrical, up to 10 mm. long with about 50 segments. Prostomium (fig. 6.1.j) rounded in front with two indistinct eyes and two minute palps. Proboscis (fig. 6.1.k) large and eversible with a lobed margin and a pair of chitinous pointed jaws. The first tentacular cirrus is a mere dorsal papilla, the second longer, ventral and digitiform and accompanied by a few fine setae. Parapodia of the next eight to ten segments all small but increasing in size and their setae are markedly shorter than those of later segments. Each fully developed parapodium (fig. 6.1.m) with a conical setigerous lobe bearing long setae, a cordate dorsal cirrus and a slightly smaller ventral cirrus. Setae (fig. 6.1.l) slender with long, pointed shaft-heads and slender blades. Small juveniles without chromatophores; larger ones with branching chromatophores below the parapodia; in addition the well developed segments of adults have a single small chromatophore on the midventrum.

Type locality: Tropical Atlantic.

Records: S.W. Atlantic (32/16/p, 34/17/p); Agulhas Current and inshore waters (from 29/31/p to 36/23/p – 16 stations); Mocambique Current (from 11/42/p to 24/39/p – four stations); S.W. Indian Ocean (28/39/p, 27/41/p, 27/45/p).

Distribution: Tropical Atlantic; temperate and tropical Pacific.

Family **ALCIOPIDAE** Ehlers, 1864

Planktonic polychaetes with slender transparent bodies and segmental glands at the bases of the parapodia. Prostomium roughly rectangular with two pairs of frontal antennae and a median dorsal one which is sometimes reduced or vestigial. Eyes enormously developed with large crystalline lenses. Proboscis eversible, without jaws but with marginal papillae or long lateral horns. Three short tentacular segments bearing three to five tentacular cirri according to the formula $1 + \frac{1}{0-1} + \frac{1}{0-(1 \text{ or } 2)}$. The parapodia of the next few segments may be reduced and lack setae and the dorsal cirri of segments 4 or 5 may be modified to form receptacula seminis in the female. Normal body segments are uniramous, each with a conical setigerous lobe and foliaceous dorsal and ventral cirri. Setae either simple or compound or both. Segmental organs usually darkly pigmented. Pygidium with a pair of anal cirri.

Records from southern Africa

Alciopa reynaudii Audouin & Milne Edwards	49Cp, —Cp, Np
as *Greeffia oahuensis* McIntosh	37Cp
Alciopina parasitica Claparède & Panceri	—Cp, Np, Pp
Krohnia lepidota (Krohn)	—Cp, Np, Pp
Naiades cantrainii Delle Chiaje	49Cp, —Cp, Np, Pp
as *Alciopa cantrainii* (Delle Chiaje)	33Cp
Plotohelmis alata Chamberlin	—Pp, Mp
Plotohelmis capitata (Greeff)	—Cp, Np, Mp
as *Rhynchonerella fulgens* Greeff	21Np
Plotohelmis tenuis (Apstein)	—Cp, Mp
Rhynchonerella angelini (Kinberg)	49Cp
as *Callizona angelini* (Kinberg)	37Cp
Rhynchonerella gracilis Costa	—Cp, Np, Mp
Rhynchonerella moebii (Apstein)	—Cp, Np, Mp
Rhynchonerella petersi (Langerhans)	—Cp, Np, Pp
Torrea candida (Delle Chiaje)	33Cp, —Cp, Np, Mp
Vanadis crystallina Greeff	49Cp, —Cp, Pp
Vanadis crystallina var. *inornata* Day	—Np
Vanadis formosa Claparède	32Np, 33Cp
	37Cp, 49Cp, —Np
Vanadis fuscapunctata Treadwell	—Cp, Np, Pp
Vanadis longissima (Levinsen)	—Cp, Np, Pp
Vanadis minuta Treadwell	—Cp, Np, Pp
Vanadis violacea Apstein	37Cp, —Cp

BIOLOGICAL NOTES

The alciopids are the most interesting of the planktonic polychaetes. The most striking feature is the great development of the eyes which are often so large that the other structures on the head become insignificant. The eyes have spherical lenses,

cup-shaped retinas and there are even special optic lobes to the brain. One suspects that they are not only capable of appreciating faint traces of light but even of forming images which would be unique in the Annelida. Apart from their efficient eyes, the alciopids are rapid swimmers and have an eversible muscular proboscis sometimes provided with a pair of lateral projections for grasping prey. Unfortunately the nature of the prey is unknown for nothing has been found in the transparent gut.

Female alciopids often have the parapodia of the fourth or fifth segment modified to act as receptacula seminales. Similarly the males of some species have large genital papillae on some segments at the time of sexual maturity. It would thus appear that sperm transfer is direct. Another line of evidence is that many alciopids have chromatophores which reach their maximum development in the adult and are then arranged in a species-specific fashion. It is probable that these chromatophores are phosphorescent in life and may provide a means of species recognition or even courtship display.

THE MAIN DIAGNOSTIC CHARACTERS

A beautifully illustrated account of this family will be found in Apstein (1900); a general discussion of morphology is given by Dales (1955) and important revisions of the genera and species were made by Greeff 1885 and Stop-Bowitz (1948). A useful key is given by Dales (1957).

The *Alciopidae* are obviously related to the *Phyllodocidae* and the same basic characters are to be found in both families; however, the *Alciopidae* are further specialised for planktonic existence and have additional characters of taxonomic importance.

Prostomium. The most obvious feature is the enormous pair of eyes. Their structure seems to be constant but there are specific differences in the angle at which they are directed. This character should be treated with caution as contraction of the head may direct the eyes ventrally. The anterior part of the prostomium may be flush with the anterior margin of the eyes or it may project forwards as a truncate cone or (exceptionally) as a barrel-shaped lobe. If the latter is present it is diagnostic but if not, it is possible that the specimen is a juvenile or has the lobe bent down as often happens. There are always five antennae, two pairs in a frontal position and a median dorsal one. This latter may be well developed and cirriform or may be reduced to varying degrees – sometimes to an obscure dorsal ridge.

The proboscis. This never has chitinous jaws but may have minute chitinised papillae on its lining and large papillae or elongate lateral horns on its margin. These are important and if not extended or visible by transparency they may be dissected by a dorsal or ventral slit through the body wall. Sometimes the membrane between the bases of the horns is lobed but unless the horns diverge widely (or are stretched apart) the presence of lobes may be simulated by mere pleating of a smoothly continuous membrane.

Tentacular cirri and the first few segments. In the *Phyllodocidae* the first one to three

segments have their cirri elongated and cylindrical forming tentacular cirri and the setigerous lobes and setae may be present or absent. In the *Alciopidae* there are always three tentacular segments without setae or setigerous lobes. Indeed a setigerous lobe and setae is often absent from segment 4.

The tentacular formula explained on p. 138 can thus be used in a simplified form omitting the setae and the acicula but retaining the symbol 1 for a cylindrical tentacular cirrus and N for a normal lamellar cirrus. Thus *Naiades* which has a single tentacular cirrus on each of the first three segments has the formula 1 + 1 + 1 and *Plotohelmis alata* which has four tentacular cirri spread over the first three segments and a normal ventral cirrus on segment 3 has the formula $1 + \frac{1}{1} + \frac{1}{N}$. The symbols D2 and D3 can be used to specify the dorsal cirri of the second and third segments and V2 and V3 their ventral homologues. The tentacular cirri are not easy to observe because the "neck" is usually contracted and the tentacular cirri of adjacent segments appear to arise dorsally and ventrally from the same segment. However, the neck can be stretched by turning the worm on its back, placing a blunt needle in its mouth and bending the head well over to one side. It will then be found that the tentacular cirri have cirrophores and that the cirrophore of the first segment is often broad and fused to the lower surface of the eye.

In the genus *Vanadis* the first few segments behind those which bear the tentacular cirri also lack setigerous lobes and their dorsal cirri though flattened may be slightly elongated and strap-like instead of being broad and cordiform. For this reason the anterior ones were confused with the tentacular cirri by early workers. The number of anterior segments without setigerous lobes or setae is a useful character but there is confusion in the literature due to the method of numbering them. Most workers have called the first segment behind those bearing the tentacular cirri "parapodial segment 1" or even more obscurely "segment 1" and when the setae appear the first is labelled "setiger 1" etc. In the account which follows the three tentacular segments are reckoned segments 1–3 and the next or "first parapodial segment" as segment 4 and so on. Thus the receptacula seminis of the female which are swollen dorsal cirri of "parapodial segment 1 or 1 and 2" are here stated to occur on "segment 4 or segments 4 and 5".

Parapodia of normal body segments. A fully developed parapodium from the middle of the body has a lamellar dorsal cirrus, a conical setigerous lobe with 0–2 *cirriform appendages* (or elongate papillae arising from the apex of the lobe) and a lamellar ventral cirrus. A *segmental organ* or swelling of the body wall next to the base of the parapodium is usually present and is often pigmented. All of these characters are of value. It is true that the shape of the cirrus changes along the length of the body but major differences remain good and the relative sizes of the dorsal and ventral cirri seem to be constant within limits. The presence or absence of a cirriform appendage (or two in *Alciopa*) is an important generic character but several parapodia must be examined as the cirriform appendages are very delicate and easily broken off. The segmental organs vary in position both segmentally and in relation to the parapodium. A large chromatophore is commonly associated with the segmental organ but it has not received the attention which it deserves probably because

its intensity varies a good deal within a single species according to the sexual development as does the exact segment on which it first appears. In general if it appears within the first four or five segments its segmental position will not vary by more than one or two but if it appears later on (say) segment 12 its first appearance may vary by four or five segments. In some species chromatophores are not present at all, in others they are dorso-lateral or lateral in position and in some they are ventro-lateral and branch over the ventrum.

Setae. The majority of the setae are slender capillaries which are occasionally simple but usually compound and spinigerous. In addition to these there may be stout acicular setae particularly on the first few setigerous segments. The capillaries are often broken off and their presence should be checked before a parapodium is mounted for high power examination. It is also necessary to examine the first few segments carefully to ascertain where the setae start and the number of acicular setae there since the latter decrease in later segments. One final point. In *Rhynchonerella* the acicular setae may be compound with smooth or serrated blades. The spinigerous setae often have short blades in the first few feet which may be confused with the compound acicular setae and the serrated blades of the latter will appear smooth unless examined in lateral view.

Key to Genera

1 Setae all simple and mainly capillaries, though acicular setae may also occur . . 2
– Setae mainly compound and spinigerous though simple or compound acicular setae may also occur 4
2 Only simple capillary setae. Prostomium not projecting in front of eyes *NAIADES* (p. 176)
– Some simple acicular setae in anterior segments. Prostomium projects in front of eyes . 3
3 No cirriform appendage at the apex of the setigerous lobe. Genital papillae below setigerous. parapodia 10–18 . . . . . *ALCIOPINA* (p. 176)
– One short cirriform appendage at the apex of the setigerous lobe. No genital papillae *KROHNIA* (p. 177)
4 No acicular setae (apart from the projecting aciculum) in anterior feet. Prostomium not projecting in front of eyes 5
– Acicular setae present in anterior feet at least. Prostomium projecting in front of eyes 7
5 Simple as well as compound capillaries present. (Cirri strap-shaped and longer than the setigerous lobe. Aciculum greatly elongated) . . . . . *WATELIO**
– Only compound capillaries present 6
6 Apex of setigerous lobe with two cirriform appendages. Only the first segment behind the tentacular cirri reduced and lacks setae . . . . . *ALCIOPA* (p. 179)
– Apex of setigerous lobe with one cirriform appendage. The first one to six segments behind the tentacular cirri reduced and lack setae . . . *VANADIS* (p. 180)
– Apex of setigerous lobe without a cirriform appendage. First segment behind the tentacular cirri with setae . . . . . *TORREA* (p. 186)
7 Apex of setigerous lobe with one cirriform appendage. Acicular setae sometimes compound . . . . . *RHYNCHONERELLA* (p. 188)
– Apex of setigerous lobe without a cirriform appendage. Acicular setae always simple *PLOTOHELMIS* (p. 192)

NAIADES Delle Chiaje, 1828

Body rather short and inflated. Prostomium not projecting in front of the eyes. Proboscis short with indistinct lateral horns. Three pairs of tentacular cirri according to the formula 1 + 1 + 1 followed by three parapodia with acicula but no setae. Later parapodia with foliaceous dorsal and ventral cirri and a setigerous lobe without a cirriform appendage but with a projecting aciculum. The setae are all simple capillaries.

Type species: *Naiades cantrainii* Delle Chiaje, 1825.

Naiades cantrainii Delle Chiaje, 1828
(fig. 7.1.a–c)

Naiades cantrainii Delle Chiaje, 1828: pl. 82 figs. 14, 18, 21; Støp-Bowitz, 1948: 24, fig. 15.
Alciopa cantrainii: Fauvel, 1923: 203 fig. 76 a–c.

Body (fig. 7.1.a) swollen and rounded in section; up to 100 mm. long with about 100 segments. Anterior margin of the prostomium (fig. 7.1.b) in line with the eyes. Frontal antennae subequal but the median small and ovoid. Eyes directed slightly forward and downward. Proboscis broad and short with a frilly margin; lateral horns short. Three tentacular cirri arranged 1 + 1 + 1, the first mounted on a swollen cirrophore attached to the lower surface of the eye; it is short but still much longer than the second and third which are minute. Segments 4–6 often constricted with small dorsal and ventral cirri plus a minute setigerous lobe but no setae. Parapodium of segment 5 swollen in the female to act as a receptaculum seminis. Segment 7 (the first normal setiger) and all subsequent segments (fig. 7.1.c) with a hastate dorsal cirrus, a slightly shorter ventral cirrus and a longer conical setigerous lobe with a projecting aciculum but no cirriform appendage. Setae as a fan of simple capillaries. From segment 6 or 7 (the first setiger) onwards there is a large dark, cushion-shaped segmental organ posterior to the parapodium. Ventral swellings (? vesiculae seminales) occur below the parapodia of some middle segments of mature males.

Type locality: Gulf of Naples.

Records: S.E. Atlantic (32/16/p, 33/15/p, 36/18/p); Agulhas Current (30/30/p to 36/22/p – five stations); Mocambique Current (14/42/p, 21/40/p); S.W. Indian Ocean 29/55/p.

Distribution: Warm and tropical Atlantic and Pacific; Mediterranean.

ALCIOPINA Claparède & Panceri, 1867

Body rather short. Prostomium extending in front of the eyes. Median antenna represented by a raised keel. Proboscis short and without lateral horns. Four pairs of tentacular cirri according to the formula $1 + \frac{1}{1} + \frac{1}{N}$. Segment 4 with or without a setigerous lobe and setae. Succeeding segments well developed, the parapodia

having foliaceous dorsal and ventral cirri and a setigerous lobe without a cirriform appendage. Stout genital papillae below the parapodia from setiger 9–18. Setae are mainly fine simple capillaries plus acicular setae in the first few setigers at least. Dark segmental organs from the first setiger onwards.

Type species: *Alciopina parasitica* Claparède & Panceri, 1867.

Alciopina parasitica Claparède & Panceri, 1867
(fig. 7.1.d–h)

Alciopina parassitica Claparède & Panceri, 1867: 8; Støp-Bowitz, 1948: 32.
Corynocephalus albo-maculatus: Fauvel, 1923: 208, fig. 78 d–i.

Body (fig. 7.1.d) rather short, seldom reaching 30 mm. for 50 setigers. Prostomium (fig. 7.1.h) extending in front of eyes. Lateral antennae stout and subequal; median antenna as an indistinct dorsal keel. Eyes large and directed laterally. Proboscis short and without lateral horns. Four pairs of tentacular cirri arranged $1 + \frac{1}{1} + \frac{1}{N}$; D3 not equal to body width and only slightly longer than D2 which is longer than D1; V2 short and cylindrical, V3 lamellar. Segment 4 without a setigerous lobe or setae. Subsequent segments with well developed parapodia (fig. 7.1.e) having large cordate and imbricating dorsal cirri, conical setigerous lobes without cirriform appendages and asymmetrically cordate ventral cirri. Dark segmental glands sometimes with branching chromatophores occur above the dorsal cirrophores from setiger 1–4 onwards. In the adult male stout genital papillae occur below the parapodia from setiger 9–18. Setigers 1–3 with only acicular setae (fig. 7.1.f) but from setiger 4 the acicular setae are fewer and fine simple capillaries (fig. 7.1.g) become more and more numerous.

Type locality: Gulf of Naples.

Records: Agulhas Current (29/31/p to 35/26/p – 11 stations); Mocambique Current (11/42/p to 25/33/p – five stations); S.W. Indian Ocean 27/39/p.

Distribution: Mediterranean; warm North Atlantic.

KROHNIA Quatrefages, 1865

Body elongate and transparent. Prostomium extending in front of eyes. Margin of proboscis with papillae but no lateral horns. Four pairs of tentacular cirri according to the formula $1 + \frac{1}{1} + \frac{1}{N}$. Segment 4 and all subsequent ones with fully developed parapodia having foliaceous dorsal and ventral cirri and a setigerous lobe with one cirriform appendage. The setae are mainly simple capillaries plus a few simple acicular setae in the anterior feet.

Type species: *Alciopa lepidota* Krohn, 1845.

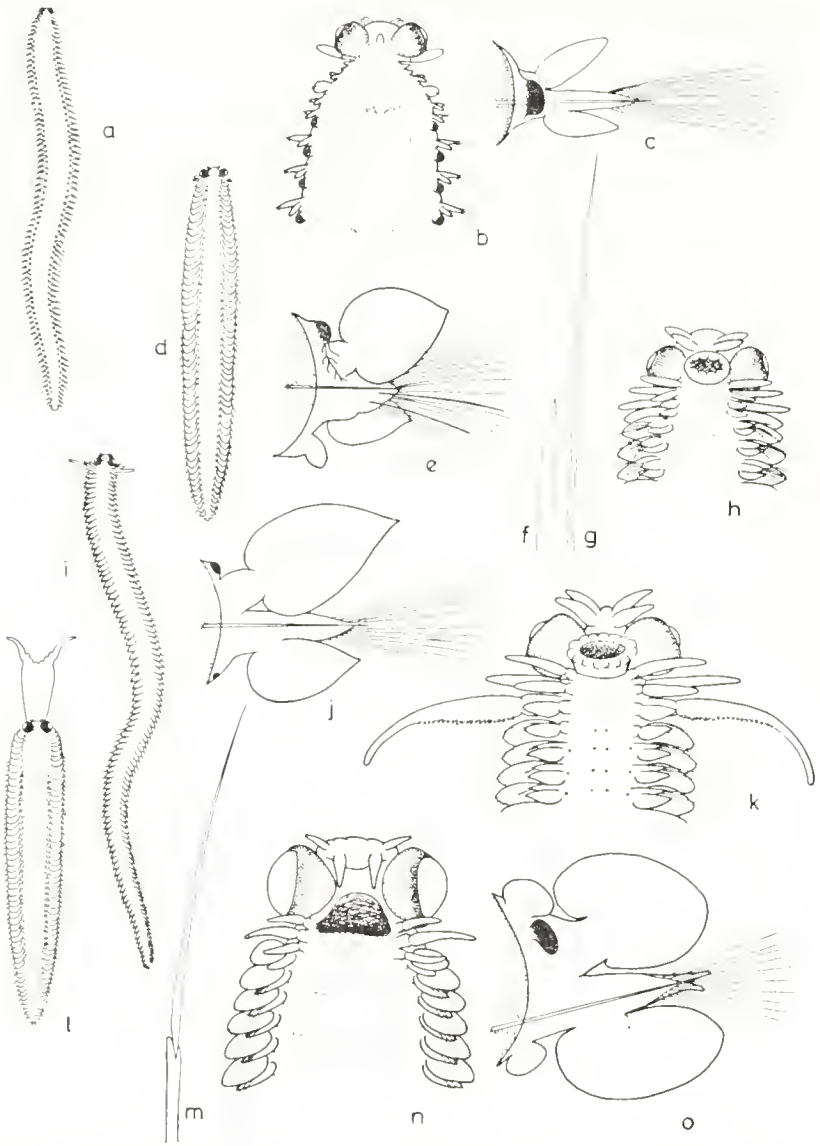

FIG. 7.1. *Naiades cantrainii*. (A) Entire worm (half natural size). (B) Head with proboscis shown by transparency. (C) Posterior view of middle foot. *Alciopina parasitica*. (D) Entire worm (twice natural size). (E) Posterior view of 15th foot of ♂. (F) Acicular seta. (G) Capillary seta. (H) Ventral view of head with margin of proboscis just visible. *Krohnia lepidota*. (I) Entire worm (twice natural size). (J) Posterior view of middle foot. (K) Ventral view of head with end of proboscis extruded. *Alciopa reynaudii*. (L) Entire worm (natural size). (M) Seta. (N) Ventral view of head. (O) Posterior view of 18th foot.

Krohnia lepidota (Krohn, 1845)
(fig. 7.1.i–k)

Alciopa lepidota Krohn, 1845: 75.
Callizonella lepidota: Fauvel, 1923: 211, fig. 79 a–h.
Krohnia lepidota: Støp-Bowitz, 1948: 33.

Body (fig. 7.1.i) elongate occasionally reaching 100 mm. and transparent with dark speckles ventrally, there being a conspicuous double row of small spots along the mid-ventral line and another at the bases of the parapodia. Prostomium (fig. 7.1.k) small and bluntly conical anteriorly with four papillose frontal antennae which arise close together. Median dorsal antenna well developed and digitiform. Eyes very large and directed slightly forward. Proboscis short with marginal papillae. Four tentacular cirri arranged $1 + \frac{1}{1} + \frac{1}{N}$ with D3 equal to the width of the segment plus the parapodia and much longer than D2 or D1; V2 small and cylindrical, V3 small and lamellar. Segment 4 and all succeeding segments (fig. 7.1.j) with a very large foliaceous dorsal cirrus with a pointed apex, a smaller but similar ventral cirrus and a setigerous lobe with a very short cirriform appendage and a projecting aciculum. The first few setigers have a few long simple acicular setae as well as simple capillaries but later segments have fine capillaries only. Segmental glands small and postero-dorsal to the parapodium from about the third foot.

Type locality: Tropical Atlantic or ? Messina (Mediterranean).

Records: ? S.E. Atlantic (34/17/p); Agulhas Current (30/31/p to 35/26/p – five stations); Mocambique Current (12/41/p to 21/40/p); S.W. Indian Ocean (32/36/p).

Distribution: Mediterranean; tropical and subtropical Atlantic and Pacific.

ALCIOPA Audouin & Milne-Edwards, 1833

Body rather short and muscular. Prostomium small and not projecting in front of eyes. Proboscis short with two lateral horns. Three pairs of tentacular cirri according to the formula 1 + 1 + 1. Segment 4 with reduced parapodia. Parapodia well developed from segment 5 onwards each having foliaceous dorsal and ventral cirri and a setigerous lobe ending in two cirriform appendages. Segmental organs divided into dorsal and ventral portions in males. The setae are all slender, compound and spinigerous.

Type species: *Alciopa reynaudii* Audouin & Milne Edwards, 1833.

Alciopa reynaudii Audouin & Milne Edwards, 1829
(fig. 7.1.l–o)

Alciopa reynaudii Audouin & Milne Edwards, 1829: 202; Stop-Bowitz, 1948: 30, fig. 21.
Greeffia celox Fauvel, 1923: 208, fig. 78 a–e.

Body (fig. 7.1.l) stout, 20–60 mm. long by 6 mm. broad for 60 segments. Prostomium (fig. 7.1.n) with four frontal antennae and a median dorsal antenna which is reduced to a swollen ridge. Eyes directed laterally. Proboscis with lateral horns and a membraneous margin between them which is often pleated so as to appear papillose. Three short pairs of tentacular cirri of which the second is the longest. Segment 4 reduced and lacks setae but the fifth and all succeeding segments (fig. 7.1.o) are well developed with large oval dorsal cirri which are broader than long, similar ventral cirri and a setigerous lobe with two cirriform appendages and a fan of compound setae. Ventral cirri of segments 5 8 or 9 are swollen in females and may act as receptacula seminis. Dark cushion-shaped segmental organs behind the dorsal cirri from segment 4; they are said to be divided into dorsal and ventral portions in the male (not seen). In addition there is a swollen vesicle above and below the parapodium from the 13th foot onwards in both sexes.

Type locality: Atlantic Ocean.

Records: S.E. Atlantic (33/15/p); Agulhas Current (34/26/p); S.W. Indian Ocean (27/39/p, 32/43/p).

Distribution: Subtropical and tropical Atlantic; Pacific off California.

VANADIS Claparède, 1870

Body long and slender. Prostomium not extending in front of the eyes. Median dorsal antenna sometimes absent. Proboscis long, often with lateral horns. Three pairs of tentacular cirri on the first three segments according to the formula 1 + 1 + 1. The first one to six parapodia (on segment 4–10) are reduced and may lack setae or even setigerous lobes. Dorsal cirri of segments 4 or 5 or both enlarged in the female to act as receptacula seminis. Normal parapodia of later segments have foliaceous dorsal and ventral cirri and a long setigerous lobe ending in one cirriform appendage. Apart from the projecting aciculum, the setae are all compound and spinigerous. Segmental organs usually pigmented on normal body segments.

Type species *Vanadis formosa* Claparède, 1870

Key to Species

1 Proboscis with lateral horns 2
– Proboscis without lateral horns 7
2 Proboscis with two pairs of lateral horns . . . . . *V. tagensis**
– Proboscis with one pair of lateral horns 3
3 Setae start on segment 6 (third foot). Median antenna digitiform . ***V. formosa*** (p. 181)
– Setae start on segment 9–10 (sixth to seventh foot). Median antenna may be absent . 4

4 Median antenna digitiform. Females with receptacula seminis in the dorsal cirri of segments 4 and 5 5
– Median antenna indistinct or absent. Females with receptacula seminis in segment 5 only 6
5 Segmenttl organs pigmented from about segment 11. Ventral cirri two-thirds the size of the dorsals . . . . . ***V. crystallina crystallina*** (p. 182)
– Segmental organs not pigmented at all. Ventral cirri less than one-third the size of the dorsals . . . . . ***V. crystallina inornata*** (p. 182)
6. Dorsal cirri hastate. Segmental organs forming dark vertical bars behind the parapodia from segment 7 onwards . . . . . ***V. fuscapunctata*** (p. 184)
– Dorsal cirri ovate. Segmental organs not pigmented before segment 12 if at all ***V. minuta*** (p. 184)
7 Segmental organs not pigmented. Body uniform violet when fresh . ***V. violacea*** (p. 185)
– Segmental organs and body strongly pigmented at intervals 8
8 Dark bars across the dorsum every five or ten segments . . ***V. longissima*** (p. 186)
– Dark bars across dorsum at intervals of two or three segments . . . ***V. antarctica****

Vanadis formosa Claparède, 1870
(fig. 7.2.a–e)

Vanadis formosa Claparède, 1870: 116, pl. 10 fig. 3; Fauvel, 1923: 205, fig. 77 a–c; Stop-Bowitz, 1948: 25, fig. 17.

Body (fig. 7.2.a) up to 180 mm. long for 200 segments. Superior frontal antennae short, the inferior pair longer (fig. 7.2.c). Median antenna digitiform. Eyes directed laterally. Proboscis (fig. 7.2.b) long with one pair of lateral horns and trilobed papillae between them. Three pairs of tentacular cirri arranged 1 + 1 + 1; the first which is mounted on a stout cirrophore attached to the lower surface of the eye is slightly longer than the others. Segments 4 and 5 without setigerous lobes and in the female the dorsal cirri of both are enlarged to act as receptacula seminales. The first setigerous lobe and setae (or at least an aciculum) on segment 6. The first few parapodia are small but the setigerous lobe and ventral cirrus are more than half the length of the dorsal cirrus. Parapodia reach full size by segment 12 (fig. 7.2.d) which has a foliaceous and pointed dorsal cirrus about 1·5 times as long as broad, a setigerous lobe with a long cirriform appendage and a foliaceous ventral cirrus only slightly smaller than the dorsal one. The setae (fig. 7.2.e) have blunt shaft-heads and rather short blades. Segmental organs as oval cushions behind the parapodia and are pigmented from the second setiger (segment 7) onwards.

Type locality: Gulf of Naples.

Records: S.E. Atlantic (33/15/p, 34/16/p, 35/17/p, 35/18/p); Agulhas Current (28/32/p, 32/29/p, 34/27/p); S.W. Indian Ocean (27/43/p, 28/49/p, 32/43/p).

Distribution: Warm and tropical Atlantic and Pacific; Mediterranean.

Vanadis crystallina crystallina Greeff, 1876
(fig. 7.2.f–g)

Vanadis crystallina Greeff, 1876: 68, pl. 4 figs. 35–39; Fauvel, 1923: 206, fig. 77 d–e (partim); Stop-Bowitz, 1948: 27, fig. 19 a–b.

Body rather large, up to 100 mm. long with 200 segments, and 3 mm. across the tips of the parapodia. Dorsal antenna digitiform, inferior frontals longer than the superior pair. Eyes very large and directed laterally (fig. 7.2.f). Proboscis with a pair of lateral horns which are long in the adult and a membraneous lip between them divided into five papillae. Three pairs of tentacular cirri arranged 1 + 1 + 1. The first pair are borne on stout cirrophores attached to the lower surface of the eye and their tips just reach its outer margin; the second pair shorter and the third pair slightly shorter again. Segments 4–10 with reduced parapodia having minute ventral cirri and setigerous lobes (less than half the length of the dorsal cirri). Females with the dorsal cirri of segments 4 and 5 swollen to form receptacula seminis. Normal body segments (fig. 7.2.g) have large ovate dorsal cirri twice as long as broad, ventral cirri at least half the size of the dorsal ones and a setigerous lobe with a long cirriform appendage. Segmental organs as oval cushions behind the parapodial trunks and are pigmented from about segment 11 onwards.

Type locality: Gulf of Naples.

Records: S.E. Atlantic (34/12/p, 33/15/p); Agulhas Current (34/27/p, 34/29/p); Mocambique Current (11/42/p to 27/39/p – five stations); S.W. Indian Ocean (36/34/p).

Distribution: Mediterranean; tropical and subtropical Atlantic and Pacific.

Key to Subspecies of *Vanadis crystallina*

1 Segmental organs pigmented from segment 8. Ventral cirri at least half the size of the dorsals . . . . . ***V. crystallina crystallina***
– Segmental organs not pigmented at all. Ventral cirri less than one-third the size of the dorsals . . . . . ***V. crystallina inornata***

Vanadis crystallina inornata Subsp. nov.
(fig. 7.2.h)

Generally similar to *V. crystallina crystallina* but body rather smaller, the segmental organs are not pigmented or only a few are faintly pigmented and the ventral cirri are only about one quarter the size of the dorsal ones (fig. 7.2.h). Holotype: B.M. (N.H.) Reg. No. 1966.26.2.

Type locality: Mocambique Channel.

Records: A single record; (30.16S/31.49E in 0–150 metres).

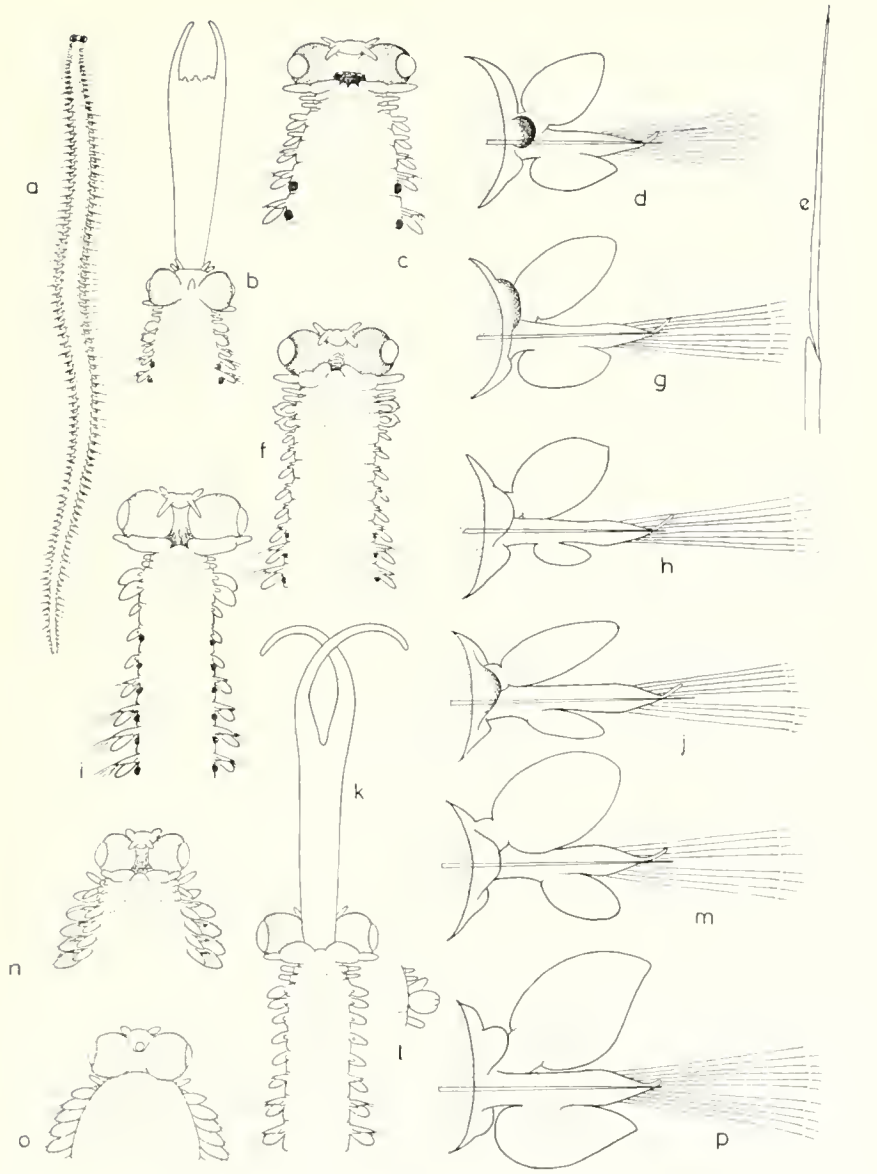

FIG. 7.2. *Vanadis formosa*. (A) Entire worm (natural size). (B) Dorsal view of anterior end of ♀. (C) Ventral view of anterior end of ♂. (D) Posterior view of middle foot. (E) Seta. *Vanadis crystallina crystallina*. (F) Ventral view of anterior end of ♀. (G) Posterior view of middle foot. *V. crystallina inornata*. (H) Posterior view of middle foot. *Vanadis fusca-punctata*. (I) Ventral view of anterior end of ♂. (J) Posterior view of middle foot. *Vanadis minuta*. (K) Ventral view of anterior end of ♂. (L) Receptaculum seminis of ♀. (M) Posterior view of middle foot. *Vanadis violacea*. (N) Ventral view of anterior end. (O) Dorsal view of anterior end. (P) Posterior view of middle foot.

Vanadis fuscapunctata Treadwell, 1906
(fig. 7.2.i–j)

Vandis fusca-punctata Treadwell, 1906: 1159, figs. 29–31.
Vanadis minuta (non Treadwell): Dales, 1957: 119, figs. 29–30.

Body slender, reaching 100 mm. in length and 2 mm. between tips of parapodia. Median antenna an indistinct dorsal ridge. Inferior frontal antennae three times as long as the superior pair. Eyes directed laterally. Proboscis long with one pair of lateral horns and a notched marginal flange between them. Three pairs of tentacular cirri arranged 1 + 1 + 1 with the first pair mounted on flattened cirrophores attached to the lower surface of the eyes and their tips just reaching the outer margin of the eye. The second and third pairs are minute and subequal, their tips not reaching the end of the cirrophore of the first pair. Parapodia of segments 4–8 reduced and lack setigerous lobes and setae so that the first setiger is segment 9. Dorsal cirri of segments 4 and 5 of the male obviously larger than those of 6 and 7 (fig. 7.2.i). Females with a receptaculum seminis on segment 5 only. Normal parapodia (fig. 7.2.j) with a lamellar dorsal cirrus three times as long as broad, a ventral cirrus half the size of the dorsal one and a setigerous lobe with a long cirriform appendage. Segmental organs as lateral ridges behind the parapodia and are all boldly pigmented from segment 7 onwards. Setae are all fine spinigers with obliquely truncate shaft-heads and short slender blades.

Type locality: Pacific, off Hawaii.

Records: Mocambique Current (11/42/p to 21/40/p – five stations); Agulhas Current (30/30/p to 34/26/p – four stations).

Distribution: Pacific (off Hawaii) – probably elsewhere but confused with *V. minuta*.

Vanadis minuta Treadwell, 1906
(fig. 7.2.k–m)

Vanadis minuta Treadwell, 1906: 1158, figs. 25–27; Tebble, 1962: 390, fig. 7.

Body small and slender, about 20 mm. long and less than 1·0 mm. broad between tips of parapodia. Median antenna reduced to an indistinct dorsal ridge. Frontal antennae well developed, the inferior pair twice as long as the superiors. Eyes directed laterally and slightly forwards. Proboscis (fig. 7.2.k) with one pair of long lateral horns and an unnotched marginal flange between them, though when contracted the flange is pleated simulating papillae. Three tentacular cirri arranged 1 + 1 + 1 with the first pair mounted on flattened cirrophores attached to the lower surface of the eyes and their tips just projecting beyond their outer margins; second and third pairs subequal and just reaching the end of the cirrophore of the first pair. Parapodia from segment 4 to 8 9 are reduced and lack setigerous lobes or setae so that the first setiger is on segment 9 or 10. Dorsal cirri of segments 4 and 5 of the male not markedly larger than those of segments 6 and 7. Females with a

receptaculum seminis in the dorsal cirrus of segment 5 only (fig. 7.2.l). Mid-body segments (fig. 7.2.m) have ovate dorsal cirri barely twice as long as broad, lamellar ventral cirri and setigerous lobes with a long cirriform appendage. Segmental organs as indistinct vertical bars behind the parapodia but they are not pigmented or only faintly so from segment 12 onwards. Setae as fine spinigers each with a short blunt apex to the shaft-head and a sword-like blade.

Type locality: Pacific, off Hawaii.

Records: Agulhas Current (30/30/p to 35/26/p – 11 stations); Mocambique Current (11/42/p to 28/39/p – 9 stations); S.W. Indian Ocean (32/36/p, 34/34/p, 36/36/p).

Distribution: Tropical Pacific (other records may be confused with *V. fusca-punctata*).

Vanadis violacea Apstein, 1893
(fig. 7.2.n–p)

Vanadis violacea Apstein, 1893: 143, pl. 5 figs. 1–4; Monro, 1936: 117.

A large stout species up to 50 mm. long for 100 segments. Colour uniform purple when fresh but opaque brown later. Dorsal antenna (fig. 7.2.o) as a rounded papilla. Frontal antennae short and stout, the inferior pair slightly longer than the superiors. Eyes directed outwards and slightly downwards. Proboscis without lateral horns but with about 12 triangular marginal papillae. Three obvious tentacular cirri (fig. 7.2.n) of which the first is very short and mounted on a stout cirrophore which is not attached to the eye, the second longer so that its tip reaches the outer margin of the eye and the third slightly shorter and directed ventrally but still longer than the first. Careful examination shows that below the second and the third there are minute but distinct ventral cirri so that the tentacular formula is $1 + \frac{1}{1} + \frac{1}{1}$. The parapodium of segment 4 is reduced to a small lamellar dorsal cirrus and a minute ventral cirrus similar to V3; setigerous lobe absent. Female unknown. From segment 5 onwards the parapodia are fully formed, each having a triangular dorsal cirrus (fig. 7.2.p), a ventral cirrus half as large and a setigerous lobe with a short cirriform appendage. Segmental organs present from segment 5 as cushion-shaped swellings behind the dorsal cirriphores but never pigmented. The setae have blunt shaft-heads and very short blades.

Type locality: South Atlantic.

Records: S.E. Atlantic (35/15/p, 36/18/p).

Vanadis longissima (Levinsen, 1885)
(fig. 7.3.a–c)

Rhynchonerella longissima Levinsen, 1885: 330, figs. 7–10.
Vanadis longissima: Dales, 1957: 121, figs. 31–33; Tebble, 1962: 392, fig. 8.

Body very long and slender reaching 200 mm. Median antenna digitiform and equal to the frontals. Eyes directed obliquely downwards and outwards. Proboscis without lateral horns but with about 12 conical marginal papillae. Three tentacular cirri (fig. 7.3.a) arranged 1 + 1 + 1. The first is stout and mounted on a broad cirrophore attached to the lower surface of the eye and its tip just reaches the outer margin; the second is shorter and more slender and the third shorter still. Parapodia of segments 4–8 are reduced and lack setigerous lobes and setae which first appear on segment 7–9; the ventral cirri are all small and that on segment 4 is a mere papilla. Dorsal cirri of segments 4 and 5 both swollen to act as receptacula seminis in the female. Parapodia reach full size about segment 10 and each parapodium (fig. 7.3.c) then has a lamellar dorsal cirrus 2·5 times as long as broad, a longer setigerous lobe with a long cirriform appendage and a smaller ventral cirrus essentially similar to the dorsal one. At intervals of 5–10 segments (fig. 7.3.b) 1–2 segments have dark bands extending from the segmental organs across the dorsum, giving a barred appearance to the whole worm. Setae are all fine spinigers with blunt shaft-heads.

Type locality: North Atlantic (26°N/26°W).

Records: S.E. Atlantic (34/16/p); Agulhas Current (30/31/p to 35/26/p – six stations); Mocambique Current (12/48/p to 27/39/p – six stations).

Distribution: Warm to tropical Atlantic and North Pacific.

TORREA Quatrefages, 1850

Body elongated and cylindrical. Prostomium not projecting in front of the eyes. Proboscis long with a pair of lateral horns. Segments 1–3 bear three pairs of tentacular cirri according to the formula 1 + 1 + 1. Segments 4 and 5 with setae but have reduced setigerous lobes; in females the dorsal cirri of both segments are enlarged to form receptacula seminis. Segment 6 and all subsequent ones with foliaceous dorsal and ventral cirri and a conical setigerous lobe without a cirriform appendage. The setae are all compound and spinigerous. Darkly pigmented segmental organs.

Type species: *Alcyope candida* Delle Chiaje, 1841.

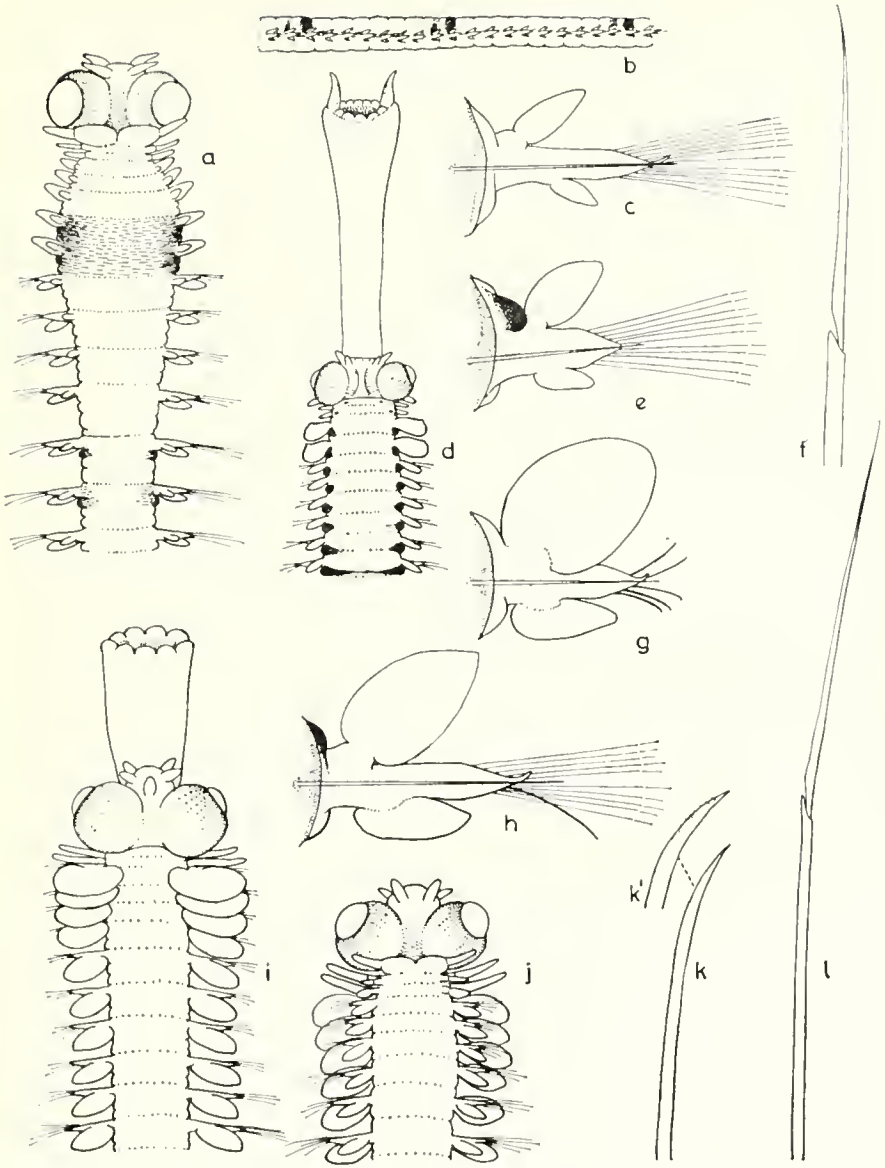

FIG. 7.3. *Vanadis longissima*. (A) Ventral view of anterior end of ♂. (B) Middle region of body showing pigmentation. (C) Foot. *Torrea candida*. (D) Dorsal view of anterior end of ♂. (E) Posterior view of foot. (F) Seta. *Rhynchorerella moebii*. (G) Third foot. (H) Middle foot. (I) Dorsal view of anterior end. (J) Ventral view of anterior end. (K) Acicular seta. (L) Compound seta.

Torrea candida (Delle Chiaje, 1841)
(fig. 7.3.d–f)

Alcyope candida Delle Chiaje, 1841 : 98 ; Monro, 1930 : 82.
Asterope candida : Fauvel, 1923 : 202, fig. 75 a–d.

Body up to 250 mm. long with more than 250 segments. Median antenna (fig. 7.3.d) in the form of a prominent keel between the eyes ; inferior pair of frontal antennae larger than the superior pair. Eyes directed outwards and slightly forwards. Proboscis long with rather short lateral horns and four to five marginal papillae or folds between them ; the inner lining beset with minute chitinous denticles. Tentacular formula 1 + 1 + 1. First pair of tentacular cirri mounted on broad cirrophores attached to the lower surface of the eyes and are larger than the second and third pairs ; all three are united by transverse ventral ridges to their fellows. Segments 4 and 5 with reduced setigerous lobes bearing a few minute setae but have long ventral cirri ; in the female the dorsal cirri of both segments are greatly enlarged to form receptacula seminis. Segments 6–12 with fully formed but small parapodia. Middle parapodia (fig. 7.3.e) each with a foliaceous dorsal cirrus, a conical setigerous lobe of the same size which lacks a cirriform appendage and a small oval ventral cirrus. Each segmental organ as a large oval cushion behind the base of the dorsal cirrus from the first setiger (segment 4) onwards. Segmental organs densely pigmented and the pigment often spreads across the dorsum to form segmental bars. Setae (fig. 7.3.f) all compound with pointed shaft-heads and short blades.

Type locality : Sicily.

Records : Agulhas Current (31/29 p, 31/31 p, 32/30 p, 33/28 p) ; Mocambique Current (off Nosy Bé).

Distribution : Mediterranean ; warm waters of North Atlantic, Indian and North Pacific oceans.

RHYNCHONERELLA Costa, 1864

Body long and slender. Prostomium extending forwards in front of the eyes. Proboscis short with small marginal papillae, but no lateral horns. Segments 1–3 with four to five tentacular cirri according to the formula $1 + \frac{1}{1} + \frac{1}{1 \text{ or } N}$. From segment 4 onwards the parapodia are fully developed, each with a foliaceous dorsal cirrus, a setigerous lobe ending in one cirriform appendage and a foliaceous ventral cirrus. The setae are mainly compound and spinigerous but simple or compound acicular setae are also present at least in the anterior setigers.

Type species : *Rhynchonerella gracilis* Costa, 1862.

Key to Species

1 Acicular setae simple 2
– Acicular setae compound 3

2 Segments 4–6 with two to seven simple acicular setae and their dorsal cirri much larger and more rounded than later ones . . . . . ***R. moebii***
– Segments 4–6 with one to two simple acicular setae and a few spinigers; the first few dorsal cirri not obviously different from later ones . . . . . ***R. gracilis***
3 Blades of acicular setae smooth. Body very large reaching 120 mm. Prostomium and anterior dorsum dark. . . . . ***R. angelini***
– Blades of acicular setae saw-edged. Body small, not exceeding 30 mm. Head not pigmented . . . . . ***R. petersi***

Rhynchonerella moebii (Apstein, 1893)
(fig. 7.3.g–l)

Callizona möbii Apstein, 1893: 147; Apstein, 1900: 16, pl. 3 figs. 23–30.
Callizona moebii: Fauvel, 1923: 213, fig. 80 a–d.
Rhynchonerella möbii: Støp-Bowitz, 1948: 34; Tebble, 1962: 396, fig. 11.

Body slender, up to 30 mm. long with 200 segments. Prostomium (fig. 7.3.i) with an anterior triangular portion projecting slightly in front of the eyes and bearing two pairs of subequal frontal antennae and a smaller median dorsal antenna. Eyes directed obliquely downwards and forwards. Five tentacular cirri (fig. 7.3.j) arranged $1 + \frac{1}{1} + \frac{1}{1}$ with D2 and D3 subequal and longer than the first which does not reach the margin of the eye. V2 and V3 small, subequal and lanceolate. Segment 4 and all subsequent segments with fully developed parapodia, but those of segments 4–10 smaller than later ones, and the dorsal cirri of segments 4, 5 and 6 are much larger and more rounded than later ones. Each of the middle parapodia (fig. 7.3.h) has a broadly hastate dorsal cirrus, a setigerous lobe with a single short cirriform appendage and a smaller ventral cirrus. Segmental organs as oval cushions postero-dorsal to the parapodia and in the adult they are pigmented from about the 15th foot. Setae include (a) numerous fine compound spinigers which appear on segment 7 or 8 (fourth or fifth foot) (b) stout simple acicular setae with curved tips which number two to seven in the first three of four feet (fig. 7.3.g) and 0–1 in posterior feet.

Type locality: Messina, Sicily.

Records: Agulhas Current (29/31/p to 35/22/p – ten stations); Mocambique Current (14/42/p to 24/39/p – five stations); ? S.W. Indian Ocean (28/39/p).

Distribution: Off Canary Is.; Mediterranean; subtropical and tropical North Pacific.

Rhynchonerella gracilis Costa, 1862
(fig. 7.4.a–d)

Rhynchonerella gracilis Costa, 1862: 168, pl. 4 figs. 13–15; Tebble, 1962: 396, fig. 10 a–b.
Callizona nasuta Fauvel, 1923: 215, fig. 81 a–c.

Body slender, up to 60 mm. long. Prostomium of the adult (fig. 7.4.a) with a barrel-shaped anterior lobe projecting far in front of the eyes and bearing the four frontal antennae close together at its end; in juveniles it is a truncate pyramid. Median antenna digitiform and situated between the eyes. Eyes directed slightly

downwards but not forwards. Five tentacular cirri (fig. 7.4.h) arranged $1 + \frac{1}{1} + \frac{1}{1}$ with D1, D2 and D3 increasing in size so that D3 is equal to the segmental width and much longer than D2. V2 and V3 small and cylindrical. Segment 4 (first foot) with a slightly enlarged lamellar dorsal cirrus, a foliaceous ventral cirrus but no setae or setigerous lobe. All parapodia after segment 4 (fig. 7.4.c) with foliaceous dorsal cirri having pointed tips, smaller ventral cirri and a setigerous lobe with a small cirriform appendage. In the adult the segmental organs form dark lateral bars between the parapodia from segment 4–5 onwards. Setae include (a) numerous fine spinigers with blunt shaft-heads and rather short blades; (b) only one to two simple acicular setae (fig. 7.4.d) both in anterior and middle parapodia.

Type locality: Gulf of Naples.

Records: S.E. Atlantic (34/17/p); Agulhas Current (from 29/31/p to 35/26/p – 12 stations); Mocambique Current (13/42/p to 24/39/p); S.W. Indian Ocean (27/41/p, 32/36/p).

Distribution: Mediterranean; tropical and subtropical Atlantic and Pacific.

Rhynchonerella angelini (Kinberg, 1866)
(fig. 7.4.e–h)

Krohnia angelini Kinberg, 1866: 242.
Rhynchonerella angelini: Dales, 1957: 133, figs. 44–46; Tebble, 1962: 400, figs. 13 and 14 a–c.

Body large, reaching 120 mm. for 150 segments. Prostomium (fig. 7.4.g) with a separate anterior lobe in front of the eyes which bears four stout, well separated frontal antennae. Median antenna ovoid and situated on the posterior part of the prostomium between the eyes. Eyes large with rather small lenses directed outwards and forwards. Five tentacular cirri (fig. 7.4.f) arranged $1 + \frac{1}{1} + \frac{1}{1}$ with D2 and D3 subequal and larger than the first; V2 and V3 relatively long. Segment 4 and all subsequent segments with large, fully formed parapodia (fig. 7.4.h) each having a cordate dorsal cirrus which covers the setigerous lobe, a smaller and more elongate ventral cirrus and a setigerous lobe with one long cirriform appendage. Posterior parapodia with more elongate cirri than the anterior ones. Prostomium and anterior dorsum dark or vaguely barred. Segmental organs appear on the 10th foot as dark cushions behind the dorsal cirrophores. Setae are all compound and include stout acicular forms with minute smooth apices (fig. 7.4.e) and slender spinigers with short blades and rather long shaft-heads. The setae appear in segment 4 and at first are mainly acicular (up to 15 per bundle) but these decrease later and spinigers become more numerous. Middle feet have a sheaf of slender spinigers and one to two stout acicular forms (from which the apices are often lost).

Type locality: China Sea (20°S/107°E).

Records: S.E. Atlantic (18/10/p, 34/15/p).

Distribution: China Sea; warm waters of North and South Atlantic and North Pacific.

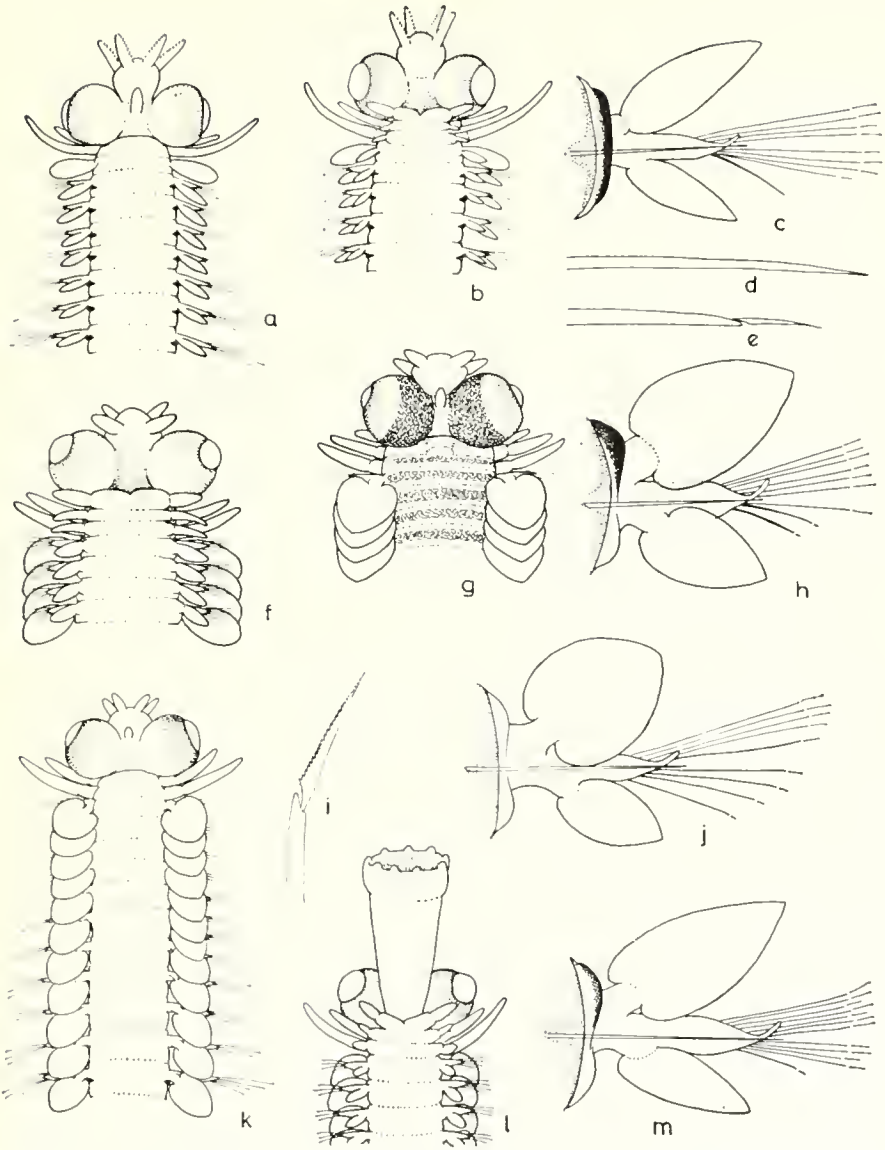

FIG. 7.4. *Rhynchonerella gracilis*. (A) Dorsal view of anterior end. (B) Ventral view of anterior end. (C) Posterior view of foot from mid-region. (D) Acicular seta. *Rhynchonerella angelini*. (E) Acicular seta. (F) Ventral view of head. (G) Dorsal view of head. (H) Posterior view of foot from mid-region. *Rhynchonerella petersi*. (I) Tip of acicular seta. (J) Posterior view of third foot. (K) Dorsal view of anterior end. (L) Ventral view of head with proboscis extruded. (M) Posterior view of foot from mid-region.

Rhynchonerella petersi (Langerhans, 1880)
(fig. 7.4.i–m)

Alciopa (*Halodora*) *petersii* Langerhans, 1880: 312, pl. 17 fig. 49.
Callizona setosa Fauvel, 1923: 214, fig. 80 e–k.
Rhynchonerella petersii: Stop-Bowitz, 1948: 34; Tebble, 1962: 398, fig. 12 a–c.

A small, slender species about 15 mm. long for 50 segments. Prostomium (fig. 7.4.k) projecting slightly in front of the eyes with four stout frontal antennae arising close together from the apex and a small dorsal one further back. Eyes directed obliquely forwards and slightly down. Proboscis (fig. 7.4.l) short with 10 low marginal papillae. Tentacular cirri arranged $1 + \frac{1}{1} + \frac{1}{N}$ with D3 equal to the segmental width and longer than D2 and this longer than D1; V2 short, V3 foliaceous. All parapodia with one short cirriform appendage. Anterior feet (fig. 7.4.j) with a large cordate dorsal cirrus and a smaller ventral one; middle feet (fig. 7.4.m) with more elongate cirri. Setae include (a) a fan of fine compound spinigers with blunt shaft-heads and at first short but later long fine blades and (b) one to two inferior acicular setae (fig. 7.4.i) which are compound having blunt shaft-heads and dagger-like blades with oblique striations and a serrated edge; in the first few feet (fig. 7.4.j) these acicular setae form a graded series with the spinigers, but in later feet (fig. 7.4.m) the single acicular seta is quite distinct. Segmental organs not pigmented until the 12th foot and are then dark lateral bars between parapodia.

Type locality: Madeira Island.

Records: S.E. Atlantic (32/16/p); Agulhas Current and inshore waters (29/31/p to 36/22 p – 12 stations); Mocambique Current (11/42/p to 26/36 p – eight stations); S.W. Indian Ocean (28/39/p, 36/35/p).

Distribution: Warm to tropical waters of North Atlantic, Mediterranean and North Pacific.

PLOTOHELMIS Chamberlin, 1919

Body small, slender and elongate. Prostomium projecting in front of the eyes. Proboscis with marginal papillae but without lateral horns. The first three segments with four to five tentacular cirri according to the formula $1 + \frac{1}{1} + \frac{1}{1 \text{ or } N}$. Segment 4 and all subsequent segments fully developed with foliaceous dorsal and ventral cirri and a setigerous lobe without a cirriform appendage but with a projecting aciculum. The setae are mainly compound spinigerous forms plus a few simple, acicular setae which are more common in anterior segments.

Type species: *Plotohelmis alata* Chamberlin, 1919.

Key to Species

1 Eyes directed forwards. Tentacular cirrus D2 longer than D3. Median antenna digitiform ***P. tenuis***

– Eyes directed laterally. Tentacular cirrus D2 shorter than D3. Dorsal antenna not digitiform 2

2 Males with nine to ten genital papillae. Chromatophores ventro-lateral but not branching ***P. alata***

– Males with three to four genital papillae. Chromatophores ventro-lateral and branching on the ventrum. . . . . ***P. capitata***

Plotohelmis tenuis (Apstein, 1900)
(fig. 7.5.a–c)

Corynocephalus tenuis Apstein, 1900: 14, pl. 2 figs. 14–15.
Plotohelmis tenuis: Dales, 1957: 125, figs. 36–38; Tebble, 1962: 403, figs. 15 a–b, 16, 17.

Body small and slender, reaching 30 mm. for 100 segments. Prostomium (fig. 7.5.c) with a large bulging anterior lobe in front of the eyes. Frontal antennae tapered, the inferior pair longer; dorsal antenna digitiform. Proboscis short with indistinct marginal papillae. Eyes large and directed obliquely forwards. Five tentacular cirri (fig. 7.5.b) arranged $1 + \frac{1}{1} + \frac{1}{1}$ with D2 twice as long as D1 or D3. V2 small, V3 minute. Parapodia (fig. 7.5.a) each with a very large, broadly oval dorsal cirrus extending well beyond the setigerous lobe, a setigerous lobe without a cirriform appendage and a very small ventral cirrus. Segmental organs not pigmented in juveniles but as lateral bars behind the bases of the parapodia from segment 12–13 onwards in adults. Setae appear on segment 4 and at first all are stout, simple and acicular but slender compound spinigers soon replace them leaving only one simple acicular seta in middle parapodia.

Type locality: Tropical Atlantic.

Records: Agulhas Current (33/28/p and 35/26/p); Mocambique Current (12/48/p, 14/42/p, 22/41/p).

Distribution: Pacific (off California); Mediterranean; tropical Atlantic.

Plotohelmis alata Chamberlin, 1919
(fig. 7.5.d–l)

Plotohelmis alata Chamberlin, 1919: 144, pl. 23 figs. 4–10, pl. 24 figs. 1–3.

Body about 60 mm. long for 200 segments. Prostomium (fig. 7.5.e) projecting as a truncate pyramid in front of the eyes. Eyes directed laterally. Frontal antennae long and tapered. Dorsal antenna small, conical. Proboscis long with more than six marginal papillae. Four tentacular cirri (fig. 7.5.f) arranged $1 + \frac{1}{1} + \frac{1}{N}$; the first is short and D2 and D3 are successively longer so that D3 equals the width of the segment and extends beyond the eyes. V2 is short and cylindrical but V3 is a normal lamellar ventral cirrus slightly smaller than that on segment 4. Segment 4 and all succeeding segments have fully formed parapodia each with a very large dorsal cirrus which covers the parapodium and is at first cordate but later more oval (fig. 7.5.d), a conical setigerous lobe without a cirriform appendage and a ventral cirrus similar to the dorsal one but slightly smaller. In the mature male, segments 13–22 have stout, curved, genital papillae (fig. 7.5.g) postero-ventral to the parapodia. Segmental organs ventro-lateral and pigmented from segments 5–6

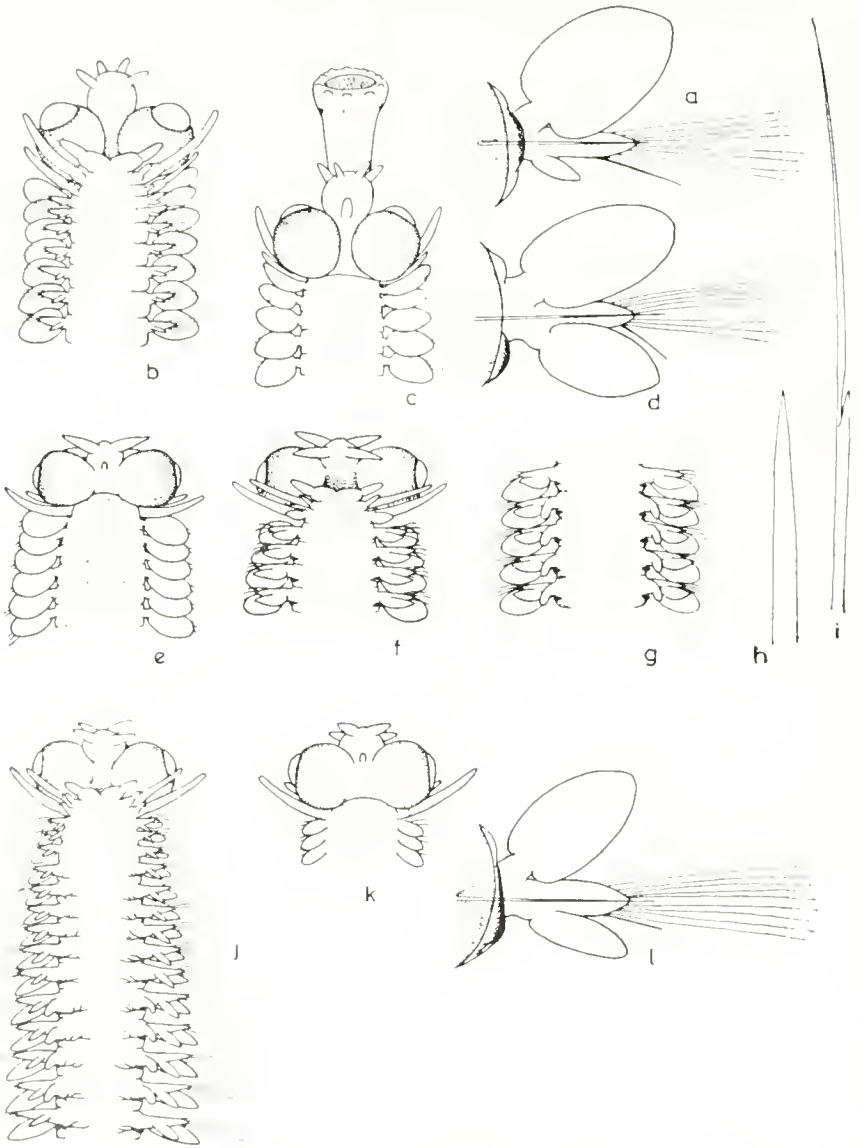

FIG. 7.5. *Plotohelmis tenuis*. (A) Posterior view of foot from mid region. (B) Ventral view of anterior end. (C) Dorsal view with proboscis extruded. *Plotohelmis alata*. (D) Posterior view of foot from mid region. (E) Dorsal view of head. (F) Ventral view of head. (G) Ventral view of segments 12–16 of male to show genital papillae. (H) Acicular seta. (I) Compound seta. *Plotohelmis capitata*. (J) Ventral view of anterior end showing branching chromatophores and genital papillae. (K) Dorsal view of head. (L) Posterior view of foot from mid-region.

onwards; they are visible ventrally but not dorsally and do not branch. The first 10–15 setigers have three to four stout acicular setae with curved tips plus a few slender compound spinigers (fig. 7.5.i); in later segments the spinigers become numerous and the acicular setae are reduced to one to two and have straight tips (fig. 7.5.h).

Type locality: Pacific (26° 18'N/12° 8·54'W).

Records: Mocambique Current (21/40/p).

Distribution: Subtropical North Pacific.

Plotohelmis capitata (Greeff, 1876)
(fig. 7.5.j–l)

Rhynchonerella capitata Greeff, 1876: 74, pl. 6 figs. 67–68.
Rhynchonerella fulgens Greeff, 1885: 450, pl. 13, figs. 27–32; pl. 14 figs. 33–34; Fauvel, 1923: 210, fig. 79 a–d.

Body small, about 20 mm. long. Prostomium (fig. 7.5.k) projecting slightly in front of the eyes. Frontal antennae subulate. Dorsal antenna minute. Eyes directed laterally. Proboscis short with 12–16 marginal papillae. Five tentacular cirri(fig. 7.5.j) arranged $1 + \frac{1}{1} + \frac{1}{1}$ with D3 about equal to the segmental width and much longer than D2 and this longer than the first. V2 and V3 minute and cylindrical to lanceolate. Segment 4 and all succeeding segments have fully formed parapodia (fig. 7.5.l) each with a broadly oval dorsal cirrus twice as long as broad, a setigerous lobe without a cirriform appendage and a small oval ventral cirrus. Mature males with sperm ducts opening on swellings postero-ventral to the parapodia of segments 10–13 or 12–15 (fig. 7.5.j). Segmental organs poorly marked but have characteristic chromatophores which start on segment 5–9 and form vertical bars between the parapodia and extend on to the ventrum forming thin branching lines when expanded. Setae include stout acicular forms with pointed tips and slender compound spinigers with blunt shaft-heads and slender blades. Segments 4–10 have three to five acicular setae with curved tips but later ones have only one to two with straight tips. Spinigers start on segment 5 and soon become numerous.

Type locality: Algiers.

Records: Agulhas Current (29/32/p to 35/22/p – nine stations); Mocambique Current (11/42/p to 18/32/p – five stations); S.W. Indian Ocean (28/39/p, 33/33/p).

Distribution: Mediterranean and warm North Atlantic; Japan.

Family **TOMOPTERIDAE** Grube, 1848

Transparent planktonic worms with setae limited to the first two segments. The prostomium bears a pair of long divergent antennae, a pair of eyes and a pair of nuchal epaulettes. It is fused to the first two segments each of which develops a pair of cirriform appendages with an internal aciculum. During development the aciculum or even the whole first pair of cirri may be lost. In the adult the second pair of cirri is always retained and may grow as long as the body. Pharynx short and unarmed. Body of 12–40 biramous segments and often a tail region with rudimentary parapodia. Normal parapodia lack setae but both the notopodial and the neuropodial ramus is bordered by a membraneous pinnule. The neuropodial pinnule always bears a darkly staining chromophil gland from the 1st–5th foot onwards. Either hyaline or rosette glands may be present in the pinnules as well. Gonads are always present in the dorsal ramus and sometimes in the ventral ramus too.

Records from southern Africa

Tomopteris apsteini Rosa	36Cp, 49Cp,
Tomopteris dunckeri Rosa	—Cp, Np, Pp
Tomopteris elegans Chun	—Cp, Np, Pp, Mp
as *Tomopteris kefersteini* Greeff	23Ap, Cp, Np
Tomopteris euchaeta Chun	—Cp, Np, Pp
as *Tomopteris nisseni* Rosa	33Cp, 49Cp
Tomopteris helgolandica Greeff	—Wp, Cp
Tomopteris krampi Wesenberg-Lund	49Cp
as *Tomopteris cavallii*: Monro (non Rosa)	33Cp
Tomopteris ligulata Rosa	—Cp
Tomopteris nationalis Apstein	—Cp, Mp
Tomopteris pacifica Izuka	—Np, Mp
Tomopteris planktonis Apstein	49Cp, —Wp, Cp, Np, Pp
Tomopteris septentrionalis Steenstrup	23aCp, 33Cp, 49Cp, —Cp

BIOLOGICAL NOTES

While Tomopterids are never abundant, they are present in most plankton hauls and are found at all depths. When seen alive they look like delicate transparent feathers but they soon die and little is known about their biology. Nothing is to be seen in the transparent gut but the body cavity occasionally contains large spherical protozoan parasites rather like eggs. The large chromophil glands are known to be phosphorescent but the functions of the other glands in the parapodia are unknown.

TOMOPTERIS Eschscholtz, 1825
(including *ENAPTERIS* Rosa, 1908)

The single genus has the characters of the family. *Enapteris* Rosa, 1908 (type species *Tomopteris euchaeta* Chun) is a juvenile stage. For details see under *Tomopteris euchaeta* (p. 202).

Type species: *Tomopteris onisciformis* Eschscholtz, 1825.

THE MAIN DIAGNOSTIC CHARACTERS

Rosa (1908 and 1908a) has given a well illustrated account of this family. Revised descriptions of several species will be found in Stop-Bowitz (1948) and useful keys in Dales (1957).

Tail. This is a posterior elongation of the trunk with rudimentary parapodia. The number of trunk segments is constant within broad limits and the presence or absence of a tail is a useful character.

Gonads may be present in the ventral rami as well as the dorsal ones. Difficulty is caused by freely moving large eggs, and it is necessary to check the location of the gonad. Dilute haematoxylin stain makes the gonad stand out clearly.

Parapodial glands. Rosette glands are best seen in unstained specimens as small, yellowish brown spots; when present they occur in the trunks of the first two feet and in both pinnules of later feet close to the apices of the rami.

Hyaline glands never occur with rosette glands and may also be seen in unstained specimens as clear areas around a yellowish spot near the apex of the pinnule. Sometimes the central spot is missing and *brief* staining with haematoxylin is then useful to make the clear area stand out. *Chromophil* glands occur only in the ventral pinnules. They are often swollen and obvious but when faint they can be made distinct by staining. In some species the chromophil glands are accompanied by *spur* glands whose pointed tip projects from the edge of the pinnule; the first few spur glands may occur in earlier feet than the chromophil glands. *Diffuse tubular* glands may also occur in both pinnules. *The first pair of cirri* are obvious but often misleading. In some species the first cirri are lost at the end of the larval stage; in others they are lost during the growth of the juvenile stage and in some they are retained thoughout life.

Key to Species

1 Tail present (fig. 8.1.g). Rosette glands and spur glands may be present 2
– Tail absent (fig. 8.2.j). Rosette glands and spur glands always absent 10
2 Gonads in both rami of the parapodia (fig. 8.1.c). (Hyaline glands absent.) . . 3
– Gonads in the dorsal ramus only 6
3 Spur glands present (fig. 8.1.c). First cirrus always present (fig. 8.1.a). Rosette glands may be absent 4
– Spur glands absent. First cirrus may be absent. Rosette glands always present . 5
4 Rosette glands present (fig. 8.1.b & c). Chromophil glands from the second or third foot . . . . . ***T. nationalis*** (p. 198)

- Rosette glands absent. Swollen chromophil glands from the third foot ***T. apsteini*** (p. 199)
5 First cirrus absent in adult. Faint chromophil glands from the first foot onwards ***T. helgolandica*** (p. 199)
- First cirrus present in adult. Large chromophil glands from the third foot onwards ***T. pacifica*** (p. 199)
6 Spur glands and rosette glands always present 7
- Spur glands absent. Rosette glands present or absent 8
7 Chromophil glands from the third foot . . . . . ***T. dunckeri*** (p. 201)
- Chromophil glands from the fifth foot . . . . . ***T. duceii**** (p. 201)
8 Rosette glands present. Hyaline glands absent . . . . . ***T. kempi**** (p. 202)
- Rosette glands absent. Hyaline glands present (fig. 8.2.d) 9
9 Pinnules with an inner, broad, clear area and a narrow frilly outer margin containing the glands (fig. 8.2.b). Second cirrus more than twice the body length except in very large adults (40 mm. or more) . . . . . ***T. euchaeta*** (p. 202)
- Pinnules normal. Second cirrus not exceeding the length of the trunk ***T. krampi*** (p. 204)
10 Gonads in both rami. Adult very large (30–80 mm.) . . ***T. carpenteri**** (p. 204)
— Gonads in notopodia only. Adult less than 30 mm. long 11
11 Pinnules continuous with dorsal and ventral ridges along the parapodial trunks (fig. 8.2.h) ***T. ligulata*** (p. 204)
— Pinnules almost or entirely restricted to the parapodial rami 12
12 First cirrus present in adults. (Hyaline glands restricted to the notopodia of the third and fourth foot) . . . . . ***T. elegans*** (p. 205)
— First cirrus absent in adults 13
13 Chromophil glands faint and apically situated. (Diffuse tubular glands in both pinnules.) Twenty-two to twenty-four pairs of parapodia (fig. 8.2.m) ***T. septentrionalis*** (p. 205)
— Chromophil glands well developed in the inferior part of the ventral pinnule. Thirteen to eighteen pairs of parapodia 14
14 Chromophil glands at the proximal edge of the ventral pinnule (fig. 8.2.o). Faint hyaline glands at apex of ventral pinnule . . . . . ***T. planktonis*** (p. 206)
— Chromophil glands in middle of ventral pinnule. Hyaline glands completely absent ***T. cavallii*** (p. 206)

Tomopteris nationalis Apstein, 1900
(fig. 8.1.a–c)

Tomopteris nationalis Apstein, 1900: 41.
Tomopteris (*Johnstonella*) *nationalis*: Rosa, 1908: 278.

Length up to 20 mm. Prostomium (fig. 8.1.a) shallowly notched between the antennae. First cirrus almost as long as the antennae. Second cirrus equals body length plus tail. Body elongated with 17 segments and a long tail bearing 3–4 rudimentary parapodia. Pinnules restricted to the parapodial rami (fig. 8.1.b, c). Chromophil glands large, swollen and present from 2nd or 3rd foot. Spur glands present. Rosette glands in the trunks of the first two feet (fig. 8.1.b) and at the apices of both rami of later feet (fig. 8.1.c). Gonads in both rami from the 2nd foot (or possibly the 1st).

Type locality: Naples.

Records: Agulhas Current (33,28 p); Mocambique Current (11 42′p, ?13 42′p, 22,41 p).

Distribution: Mediterranean.

Tomopteris apsteini Rosa, 1908
(fig. 8.1.d–e)

Tomopteris apsteini Rosa, 1908: 288, pl. 12 figs. 10–13; Fauvel, 1923: 220, fig. 83 a–d.

Length about 20 mm. Prostomium (fig. 8.1.d) notched between the antennae. First cirrus small. Second cirrus 3/4 the length of the trunk. Body with 18–24 pairs of parapodia plus four more forming the tapering tail. Pinnules restricted to parapodial rami. Chromophil glands from the 3rd foot and soon become large and swollen (fig. 8.1.e). Spur glands from the 2nd foot. No rosette or hyaline glands but a clear area.* Gonads in both rami from the 1st foot.

Type locality: Messina, Sicily.

Records: S.E. Atlantic (34/16/p).

Distribution: Mediterranean; subtropical and tropical Atlantic; tropical Pacific.

Tomopteris helgolandica Greeff, 1879
(fig. 8.1.f–h)

Tomopteris helgolandica Greeff, 1879: 264; Apstein, 1900: 38, pl. 10 figs. 1 6; Fauvel, 1923: 221 fig. 83 h–i.

Length about 12 mm. (fig. 8.1.g). Prostomium (fig. 8.1.f) notched between the antennae. First cirrus present in juveniles, absent in adults. A narrow neck. Second cirrus 2/3 the body length. 14–16 pairs of parapodia and a long tail with three to four rudimentary parapodia. Chromophil glands always small and faint (fig. 8.1.h) but present from the first foot and located in the middle of the inferior half of the pinnule. Well defined rosette glands from the first foot on the inner side of the pinnules next to the apex of each ramus. Gonads in both rami from the first foot.

Type locality: North Sea.

Records: Benguela Current (22/13/p to 32/17/9) – five stations; south of Cape Agulhas (34/20/p, 35/21/p).

Distribution: North Atlantic.

Tomopteris pacifica Izuka, 1914
(fig. 8.1.i–j)

Tomopteris pacifica Izuka, 1914: 11, figs. 1–4; Dales, 1957: 141, figs. 51 e and 53 f; Tebble, 1962: 385, fig. 6.

Length up to 30 mm. Prostomium (fig. 8.1.i) not notched between the antennae. First cirrus present. Second cirrus just longer than the body. Body with 14 well developed parapodia followed by a long tail with rudimentary parapodia. Pinnules

**Tomopteris apsteini* is probably a synonym of *T. nationalis* Apstein from which it may be distinguished mainly by the presence of a clear area. See Discussion in Dales, 1957 : 136.

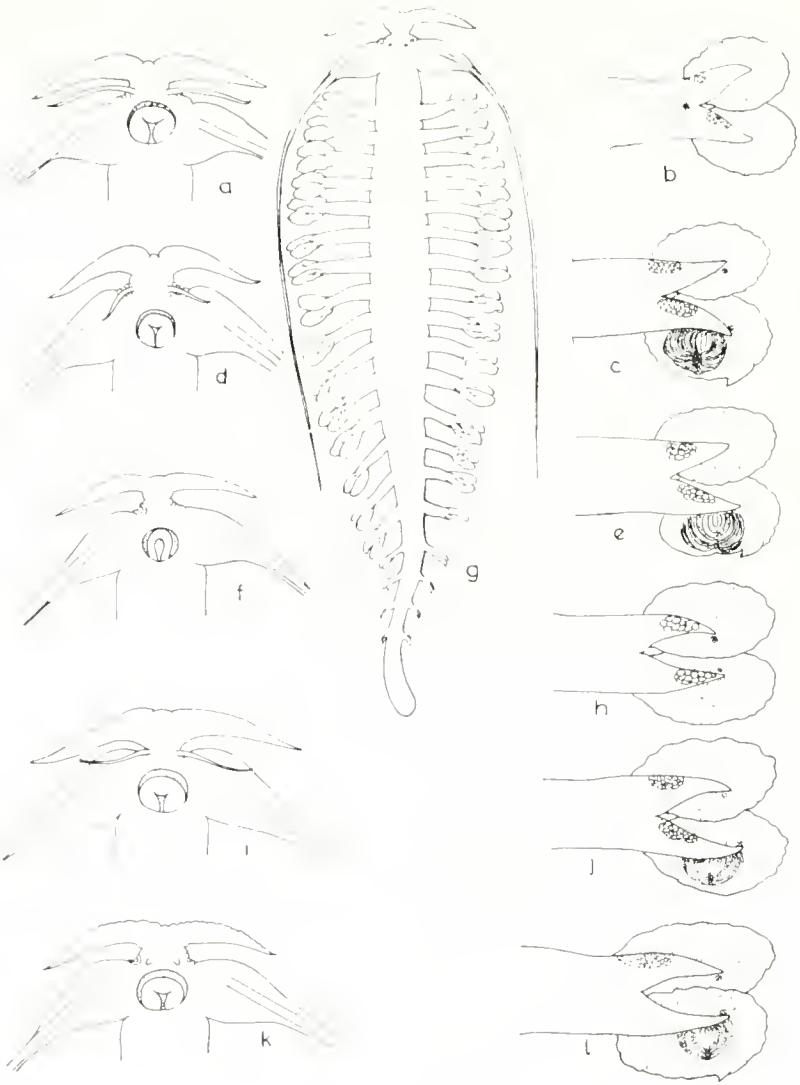

FIG. 8.1. *Tomopteris nationalis.* (A) Head. (B) Second foot. (C) Fifth foot. *Tomopteris apstemi.* (D) Head. (E) Fifth foot. *Tomopteris helgolandica.* (F) Head. (G) Entire worm (seven times life size). (H) Fifth foot. *Tomopteris pacifica.* (I) Head. (J) Fifth foot. *Tomopteris duncheri.* (K) Head. (L) Fifth foot.

restricted to parapodial rami (fig. 8.1.j). Chromophil glands large and present from the third foot. No spur glands. Rosette glands in the trunks of the first two feet and at the tips of both rami of later feet. Gonads in both rami from the second foot.

TYPE LOCALITY: Misaki, Japan.

RECORDS: Agulhas Current (29/31/p).

DISTRIBUTION: Boreal waters of North Pacific and deep water off California.

Tomopteris dunckeri Rosa, 1908
(fig. 8.1.k–l)

Tomopteris dunckeri Rosa, 1908: 276, pl. 12 figs. 7–9.

Length up to 15 mm. Prostomium (fig. 8.1.k) notched between the large antennae which often have a frilly margin. First cirrus retained until the late juvenile stage* and their stumps visible in the adult. Nuchal epaulettes very large. Second cirrus just exceeding length of body. Body with 16–17 pairs of parapodia plus 9–10 on the tail which is not sharply marked off from the body. Pinnules restricted to the parapodial rami. Chromophil glands (fig. 8.1.l) large and start on the third foot. Spur glands present from the second or third foot. Rosette glands in the trunks of the first two feet and at the tips of both rami of later feet. Gonads in the dorsal rami from the first or second foot. Pinnules of middle feet appear reticulate when fresh.

TYPE LOCALITY: Ceylon.

RECORDS: Agulhas Current (31/29/p, 31/31/p, 34/26/p); Mocambique Current (14/42/p to 27/45/p – five stations).

DISTRIBUTION: Ceylon.

Tomopteris duccii Rosa, 1907

Tomopteris duccii Rosa, 1907: 166; Rosa, 1908: 273, pl. 12 figs. 1–2.

Body with 19 pairs of parapodia and up to 15 mm. long plus a tail of 5 mm. First cirrus well developed. Second cirrus 2/3 of body length. Pinnules restricted to parapodial rami. Chromophil glands large from the fifth foot and located in the inferior part of the ventral pinnule. Spur glands well developed from the third foot, indistinct in the first and second. Rosette glands in the trunks of the first and second parapodia and near the tips of both rami thereafter. Gonads in the dorsal rami from the second foot.

TYPE LOCALITY: Pacific, near Mexico.

RECORDS: Not recorded from southern Africa.

*Note The juvenile stage with the first cirrus has been named *T. membranacea* Caroli. *T. aloysius-sibaudii* Rosa is close if not identical.

Tomopteris kempi Monro, 1930

Tomopteris kempi Monro, 1930: 88, fig. 27.

Body large and flaccid reaching 55 mm. for 16 body segments plus a tapering tail of more than seven segments. Prostomium notched between the long antennae. First cirrus absent in the adult. Nuchal grooves well marked. Proboscis eversible with a projecting upper lip. Parapodia swollen with short conical rami and narrow, tough pinnules. Chromophil glands well marked from the third foot, faint on the second and doubtful on the first. No spur glands. No hyaline glands. Rosette glands definite from the third foot near apex of each ramus but doubtful on the first and second foot. Gonads in the dorsal rami from the second foot.

Type locality: Tristan da Cunha.

Records: Not recorded from southern Africa.

Tomopteris euchaeta Chun, 1888
(fig. 8.2.a–b)

Tomopteris euchaeta Chun, 1888: 19.
Tomopteris nisseni Rosa, 1908a: 1; Stop-Bowitz, 1948: 44, fig. 29 (adult).
Enapteris euchaeta: Fauvel, 1923: 218, fig. 82 a–c (juvenile).

Body up to 150 mm. long with 39 body segments and several tail segments. Prostomium (fig. 8.2.a) notched between the long antennae which extend as wide as the parapodia. Eyes small. Pharynx short, not reaching the first foot. First cirrus lost after the larval stage and absent in both the juvenile and adult. Second cirrus very long in juveniles, up to four times body length, but shorter than body in large adults. Body with about 15 segments in juveniles but up to 39 in adults including a long tail with several distinct segments. Parapodial rami (fig. 8.2.b) expanded with broad pinnules each divided into an outer frilly area bearing the glands and an inner clear area which simulates a flattened extension of the ramus. Glandular outer edge not extending between the rami in juveniles. Chromophil glands from fourth foot, apico-inferior in position and becoming swollen in adults. No spur glands. Hyaline glands indistinct but always present towards the distal end of the inferior part of the ventral pinnule from the third foot onwards. In the dorsal pinnule they are absent in juveniles and variable in adults. Gonads in the dorsal ramus from the second foot.

Type locality: Mediterranean Sea.

Records: S.E. Atlantic (34°12′p, 34°16 p); Agulhas Current (from 30°31′p to 35°26 p – seven stations); Mocambique Current (11°42′p to 27°39 p – seven stations); S.W. Indian Ocean (32°53 p, 35°48′p, 37°58′p) – all records from below 100 metres and many from below 500 metres.

Distribution: Mediterranean; temperate and tropical Atlantic and North Pacific (recorded as *T. nisseni*).

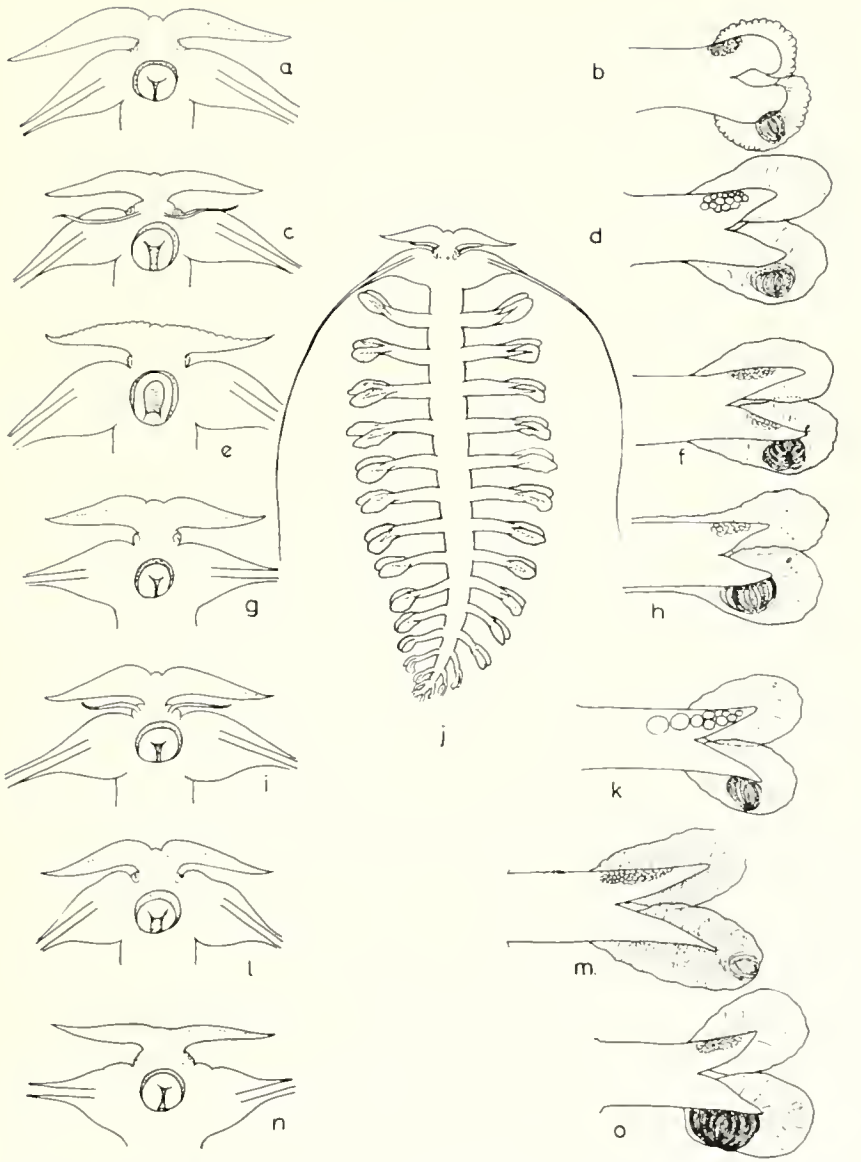

FIG. 8.2. *Tomopteris euchaeta.* (A) Head. (B) Fifth foot. *Tomopteris krampi.* (C) Head. (D) Fifth foot. *Tomopteris carpenteri.* (E) Head. (F) Fifth foot. *Tomopteris ligulata.* (G) Head. (H) Fifth foot. *Tomopteris elegans.* (I) Head. (J) Entire worm (six times life size). (K) Fourth foot. *Tomopteris septentrionalis.* (L) Head. (M) Fifth foot. *Tomopteris planktonis.* (N) Head. (O) Fifth foot.

Tomopteris krampi Wesenberg-Lund, 1936
(fig. 8.2.c–d)

Tomopteris krampi Wesenberg-Lund, 1936: 8, figs. 1–3; Støp-Bowitz, 1948: 48, fig. 34.
Tomopteris (Tomopteris) cavallii: Monro, 1930: 87.

Length up to 26 mm. Prostomium (fig. 8.2.c) not notched between the long antennae. First cirrus retained in adult but slender. Second cirrus just longer than body. Body with 21 pairs of parapodia and a very short tail. Pinnules extend on to the distal ends of the parapodial trunks (fig. 8.2.d). Chromophil glands voluminous from fourth foot onwards and are situated in the inferior half of the ventral pinnule. No spur glands. Hyaline glands very faint but present at the apices of both pinnules from the third or fourth foot. Gonads in the dorsal rami from third foot.

Type locality: S.W. of Iceland.

Records: S.E. Atlantic (34/16 p).

Distribution: Atlantic from S.W. Iceland to warm South Atlantic; deep hauls off California.

Tomopteris carpenteri Quatrefages, 1865
(fig. 8.2.e–f)

Tomopteris carpenteri Quatrefages, 1865: 227, pl. 20 figs. 1–2; Benham, 1921: 61, pl. 8 figs. 64–66; Tebble, 1960: 174, fig. 7.

A very large species reaching 90 mm. with 35 pairs of parapodia. No tail. Prostomium (fig. 8.2.e) not notched between the antennae. Neck short and broad. First cirrus absent in adults. Second cirrus half the body length. Pinnules oval, frilly and extend on to the distal ends of the parapodial trunks (fig. 8.2.f). Chromophil glands from the fourth foot onwards; they are large and voluminous and located on the inferior half of the ventral pinnule. No spur glands. Hyaline glands pigmented and appear in the third foot in the superior half of the ventral pinnule and are present in all subsequent feet. Gonads in both dorsal and ventral rami from the first or second foot onwards.

Type locality: 60° 03′S/00° 06′E.

Records: Not recorded from southern Africa.

Distribution: Subantarctic and Antarctic.

Tomopteris ligulata Rosa, 1908
(fig. 8.2.g–h)

Tomopteris ligulata Rosa, 1908a: 1; Rosa, 1908: 302, pl. 12 figs. 18–19; Støp-Bowitz, 1948: 52, fig. 38.

Body about 10 mm. long with 24 segments. No tail. Prostomium (fig. 8.2.g) not notched between the antennae. First cirrus absent in adults. Second cirrus 3 4 body length. Pinnules extend from the rami along the whole length of the

parapodial trunks as dorsal and ventral ridges (fig. 8.2.h). Chromophil glands large from the fourth foot onwards and are located in the inferior part of the ventral pinnule. No spur gland. Hyaline glands present in the superior part of the ventral pinnule from the third to seventh foot at least. Gonads in the dorsal rami from the third foot onwards.

Type locality: Tropical Atlantic (22°N/35°W).

Records: Agulhas Current (34/26/p, 34/27/p); S.W. Indian Ocean (33/33/p, 35/48/p).

Distribution: Warm to tropical Atlantic and Pacific.

Tomopteris elegans Chun, 1888
(fig. 8.2.i–k)

Tomopteris elegans Chun, 1888: 18, pl. 3 figs. 4–9; Støp-Bowitz, 1948: 46, fig. 33 a–b.
Tomopteris Kefersteinii Greeff, 1879: 275.

Body (fig. 8.2.j) slender and delicate, less than 10 mm. long with 14 segments. No tail. Prostomium (fig. 8.2.i) notched between the long, broad antennae. Neck narrow. First cirrus retained in adults but may be small. Second cirrus with a globular base and equal to 2/3 the body length. Parapodial trunks long and slender. Pinnules oval and restricted to the parapodial rami (fig. 8.2.k). Chromophil glands well developed from the fourth foot onwards and situated below the tip of the ventral ramus. No spur glands. Hyaline glands restricted to the dorsal pinnules of the third and fourth foot; they are situated at the apex of the pinnule but are seldom obvious except in sexually mature adults. Gonads present in the dorsal rami from the third to about the eighth foot.

Type locality: Canary Islands.

Records: S.E. Atlantic (34/17/p); Agulhas Current (30/30/p to 36/23/p – 14 stations); Mocambique Current (11/42/p to 28/39/p – 12 stations); S.W. Indian Ocean (32/36/p, 36/35/p).

Distribution: Atlantic (from temperate North Atlantic south to the subtropical convergence); warm North Pacific.

Tomopteris septentrionalis Quatrefages, 1865
(fig. 8.2.l–m)

Tomopteris septentrionalis Quatrefages, 1865: 229; Fauvel, 1923: 224, fig. 84 d; Støp-Bowitz, 1948: 49, fig. 36.

Body up to 26 mm. long with 20–24 pairs of parapodia. No tail. Prostomium (fig. 8.2.l) notched between the antennae. Nuchal epaulettes well marked. No first cirrus in the adult. Second cirrus 3/4 the length of the body. Pinnules oval, the dorsal one on anterior feet extending onto the distal end of the parapodial trunk. Tubular glands in both pinnules from the first foot onwards so that the posterior

pinnules are often opaque (fig. 8.2.m). Chromophil glands not well developed but present at the apex of the ventral pinnule from the fourth foot onwards. No spur glands. Hyaline glands present at the apex of the ventral pinnule from the second to fourth foot but indistinct in later feet. Gonads in the dorsal rami from the second foot to about the 14th.

Type locality: Danish seas.

Records: Benguela Current (32/17/p, 34/18/p); S.E. Atlantic (26/12/p, 27/12/p, 29/12/p, 34/12/p); deep tows in Mocambique Current (14/42/p, 18/41/p, 21/37/p); S.W. Indian Ocean (39/38/p).

Distribution: Cosmopolitan in cold water masses.

Tomopteris planktonis Apstein, 1900
(fig. 8.2.n–o)

Tomopteris planktonis Apstein, 1900: 42, pl. 11 figs. 21–22, pl. 12; Fauvel, 1923: 224, fig. 84 f; Stop-Bowitz, 1948: 52, fig. 39.

A small species about 7 mm. long with 13–18 pairs of parapodia. No tail. Prostomium (fig. 8.2.n) not notched between the antennae. Neck broad and short. First cirrus absent in the adult. Second cirrus up to 3/4 body length. Pinnules restricted to parapodial rami. Large chromophil glands from the fourth foot onwards and are located at the proximal end of the inferior half of the ventral pinnule where they cause an obvious swelling (fig. 8.2.o). No spur glands. Hyaline glands indistinct but present at the apices of the ventral pinnules from the first foot onwards. Gonads in the dorsal rami from the second or third foot onwards.

Type locality: Central and North Atlantic.

Records: All round southern Africa, mainly in oceanic waters (50 stations).

Distribution: North Atlantic to the Antarctic; sub-arctic zone of North Pacific.

Tomopteris cavalli Rosa, 1907

Tomopteris cavallii Rosa, 1907: 176; Rosa, 1908: 304, pl. 12 fig. 20; Dales, 1957: 144, fig. 51 b and 52 b.

A small species about 5 mm. long with 17 pairs of parapodia. Prostomium shallowly notched between the short antennae. Neck broad and short. First cirrus absent in the adult. Second cirrus 2/3 the body length. No tail. Pinnules restricted to parapodial rami. First two to three parapodia with diffuse tubular glands in the dorsal pinnules. Chromophil glands large and start on the fourth foot and located in the middle of the inferior half of the ventral pinnule. *No hyaline or rosette glands.* Gonads in the dorsal rami from the second or first foot.

Type locality: South Pacific.

Records: One doubtful record for southern Africa. (Possibly synonymous with *Tomopteris planktonis* Apstein.)

Distribution: North western Atlantic; Indian Ocean; western Pacific.

Family **TYPHLOSCOLECIDAE** Uljanin, 1878

Transparent planktonic worms with fusiform bodies. Head conical or blunt, without eyes, sometimes with a dorsal caruncle but always with an internal retort organ above the pharynx, an anterior palpode and a pair of well developed nuchal organs which often form free posterior projections. The larval stage has a ciliated ridge or prototroch encircling the head in front of the mouth and in the neotenic genus *Typhloscolex* this ridge is expanded to form large dorsal and ventral lobes. The first three segments are fused to the prostomium and each bears a single pair of lamellar cirri which enfold the head. Normal body segments are uniramous with large foliaceous dorsal and ventral cirri which lie against the body but there is only a rudimentary setigerous lobe bearing a few simple acicular setae. Pygidium with a pair of large flattened anal cirri.

Records from southern Africa

Sagitella kowalewskii Wagner	21Np, —Wp, Cp, Np, Mp
Travisiopsis coniceps (Chamberlin)	49Cp, —Pp
as *Sagitella lobifera* Ehlers	33Cp
Travisiopsis dubia Stop-Bowitz	—Cp, Np, Pp, Mp
? as *Sagitella cornuta* Ehlers	33Cp, 21Np
Travisiopsis lanceolata Southern	49Cp, —? Np
as *Sagitella kowalewskii*: Monro (non Wagner)	33Cp
as *Travisiopsis* sp.	33Cp
Travisiopsis levinseni Southern	—Cp
Travisiopsis lobifera Levinsen	49CP, —Pp
Typhloscolex muelleri Busch	21Np, 49Cp, —Wp, Cp, Np, Mp
Typhloscolex cf. *phyllodes* Reibisch	?—Cp, Mp

Indeterminate species

Travisiopsis capensis McIntosh	32Np

REMARKS

Practically nothing is known about the biology of this family. The only common species is *Sagitella kowalewskii* and this dies quickly in plankton samples. Most species of *Travisiopsis* are deep sea oceanic forms though the juveniles are occasionally taken near the surface. *Typhloscolex* itself is an enigma. Its small size, pear-shaped form and the ciliated lobes on the head are reminiscent of a trochophore and it is possible that *Typhloscolex* is a neotenic genus. Certainly the larvae of other genera show resemblences to it.

Important taxonomic references include Southern (1911), Fauvel (1923), Stop-Bowitz (1948) and Dales (1957). Generic differences are based on the structure of the prostomium (particularly the development of the caruncle and nuchal organs). Specific differences include the number of segments and the shape of the anal cirri. Incidentally the latter are liable to fall off and the last pair of parapodial cirri have

been figured as anal cirri in at least one species. There is a large flask-shaped organ of unknown function in the roof of the mouth, if this is everted then the whole head is distorted.

Key to Genera

1 Prostomium with large transverse ciliated lobes dorsally and ventrally (fig. 9.1.a) ***TYPHLOSCOLEX*** (p. 208)
– Large transverse ciliated lobes absent 2
2 Nuchal organs as curved ridges without freely projecting lobes. No projecting caruncle (fig. 9.1.d) . . . . . ***SAGITELLA*** (p. 209)
– Nuchal organs with freely projecting lobes. A caruncle usually present (fig. 9.1.h) ***TRAVISIOPSIS*** (p. 210)

TYPHLOSCOLEX Busch, 1851

Body 3–5 mm. long, markedly tapered posteriorly and with less than 25 segments. Prostomium rounded in front and with an asymmetrical palpode (? fused apical cilia) and large dorsal and ventral ciliated lobes. A pair of free nuchal lobes borne on the sides of the dorsal ciliated lobe. A large retort organ above the pharynx. Three pairs of lamellar cirri enfold the head. Each body segment with a large lamellar dorsal and ventral cirrus and a poorly marked setigerous lobe. Two to three acicular setae appear after the first few segments. Anal cirri small.

Type species: *Typholoscolex muelleri* Busch, 1851.

Key to Species

1 Ciliated lobes about as broad as head. Dorsal and ventral cirri together equal to body width . . . . . ***T. muelleri***
– Ciliated lobes much narrower than head. Dorsal and ventral cirri each equal to body width . . . . . ***T. phyllodes***

Typhloscolex muelleri Busch, 1851
(fig. 9.1.a–b)

Typhloscolex Mulleri Busch, 1851: 115, pl. 2 figs. 1–6; Reibisch, 1895: 52, pl. 5 figs. 1–5; Fauvel, 1923: 226, fig. 85 a–h.

Body (fig. 9.1.a) tapered and 2–3 mm. long for 20–24 segments. Prostomium fig. 9.1.b) blunt and bearing a small, asymmetrical palpode with a ventral swelling. Retort organ obvious internally. Ciliated lobes almost as broad as the head, the dorsal one bearing a pair of small nuchal lappets at the sides. Sides of head enfolded by three pairs of flattened cirri the first of which is elongated in a dorso-ventral direction. Eighteen body segments with cordate to square dorsal and ventral cirri

which together equal the body width. Posterior cirri more pointed. Anal cirri small and ovate.

Type locality: Adriatic Sea.

Records: All around southern Africa from South West Africa to Madagascar (34 stations).

Distribution: Cosmopolitan apart from the Arctic Ocean; in the Antarctic it occurs in warm deep water.

Typhloscolex phyllodes Reibisch, 1895

Typhloscolex phyllodes Reibisch, 1895: 55, pl. 5 figs. 6–7.

Body 2·5 mm. long, stout anteriorly and markedly tapered posteriorly with 22 segments. Anterior palpode small, asymmetrical and with a ventral swelling. Dorsal and ventral ciliated lobes narrower than the width of the head, the dorsal one bearing a pair of small nuchal lappets at the sides. Three pairs of flattened cirri enfolding the sides of the head. Body segments with very large dorsal and ventral cirri which are roughly square in shape and each equal to the width of the body; posterior cirri more rounded but still large. Setigerous lobes conical and prominent. Anal cirri unknown.

Records: No certain record from southern Africa.

Type locality: Tropical Atlantic.

Note. This is a doubtful species; possibly a larval stage of *Travisiopsis* sp.

SAGITELLA Wagner, 1872

Body slender, fusiform and very transparent, 5–15 mm long. for 28–38 segments. Head without ciliated lobes or projecting caruncle. A pair of semi-circular nuchal ridges on the posterior part of the prostomium but no free nuchal lobes. Sides of head enfolded by three pairs of lamellar cirri. Body segments with both dorsal and ventral lamellar cirri and a rudimentary setigerous lobe which bears acicular setae after the first few segments. Anal cirri flattened and expanded.

Type species: *Sagitella kowalewskii* Wagner, 1872.

Sagitella kowalewskii Wagner, 1872
(fig. 9.1.c–e)

Sagitella kowalewskii Wagner, 1872: 343, figs. A–C; Fauvel, 1923: 228, fig. 85 a–c.

Body (fig. 9.1.c) from 5 to 15 mm. long, fusiform in shape and very transparent so that the inter-segmental septa are visible. Three head segments and 25–35 body segments with both dorsal and ventral cirri. Prostomium (fig. 9.1.d) conical and produced forward as a slender palpode. Head swollen dorsally but no projecting

caruncle. A pair of semicircular nuchal ridges outline the occipital region of the head. Cirri enfolding the head cordate. Anterior body segments with the dorsal and ventral cirri quadrangular, broader than long and pressed close against the sides of the body; posterior ones more cordate and the last few acuminate. Setigerous lobes obsolescent and the acicular setae minute. Anal cirri subtriangular, broader than long (fig. 9.1.e).

Type locality: Tropical Atlantic.

Records: S.E. Atlantic (25/13/p, 34/17/p); Agulhas Current (29/31/p to 36/23/p – 18 stations); Mocambique Current (11/42/p to 24/39/p – nine stations); S.W. Indian Ocean (28/39/p to 40/32/p – eight stations).

Distribution: Temperate to tropical Atlantic and Pacific.

TRAVISIOPSIS Levinsen, 1885

Body fusiform with 18–22 setigerous segments. Skin rather thick so that intersegmental septa are not easily visible. Prostomium conical with an anterior palpode. Usually a projecting dorsal lobe or caruncle on the head. A pair of nuchal organs always with free posterior lobes. Three pairs of lamellar cirri enfolding the sides of the head. Body segments with both dorsal and ventral foliaceous cirri and a small setigerous lobe bearing a few acicular setae. Pygidium with foliaceous anal cirri.

Type species: *Travisiopsis lobifera* Levinsen, 1885.

Key to Species

1 A freely projecting lobe or caruncle above the brain (fig. 9.1.f) 2
– Caruncle not freely projecting, merely an oval swelling above the brain 3
2 Nuchal lobes branched (fig. 9.1.f). Anal cirri spathulate . . . . ***T. coniceps*** (p. 210)
– Nuchal lobes simple and digitiform. Anal cirri long and ovate (fig. 9.1.i)
T. lanceolata (p. 212)
3 Anal cirri oval. Ninteen to twenty-five body segments. Nuchal lobes rounded (fig. 9.1.k)
T. dubia (p. 212)
– Anal cirri subtriangular (fig. 9.1.n). Eighteen body segments. Nuchal lobes digitiform and parallel . . . . . ***T. lobifera*** (p. 213)
– Anal cirri spathulate. Twenty-two body segments. Nuchal lobes semi-circular
T. levinseni (p. 213)

Travisiopsis coniceps (Chamberlin, 1919)
(fig. 9.1.f–g)

Plotobia coniceps Chamberlin, 1919: 156, pl. 66, figs. 2–4.
Sagitella lobifera Ehlers, 1912: 24, pl. 3 figs. 1–4; Monro, 1930: 90. (Pre-occupied by *T. lobifera* Levinsen, 1885.)

Body fusiform, up to 18 mm. long with a head region of three segments each bearing a single pair of lamellar cirri and 19 body segments with both dorsal and ventral cirri. Prostomium (fig. 9.1.f) conical with a stout palpode. Caruncle an erect, tongue-shaped lobe. Nuchal organs extending back as a pair of free, branching

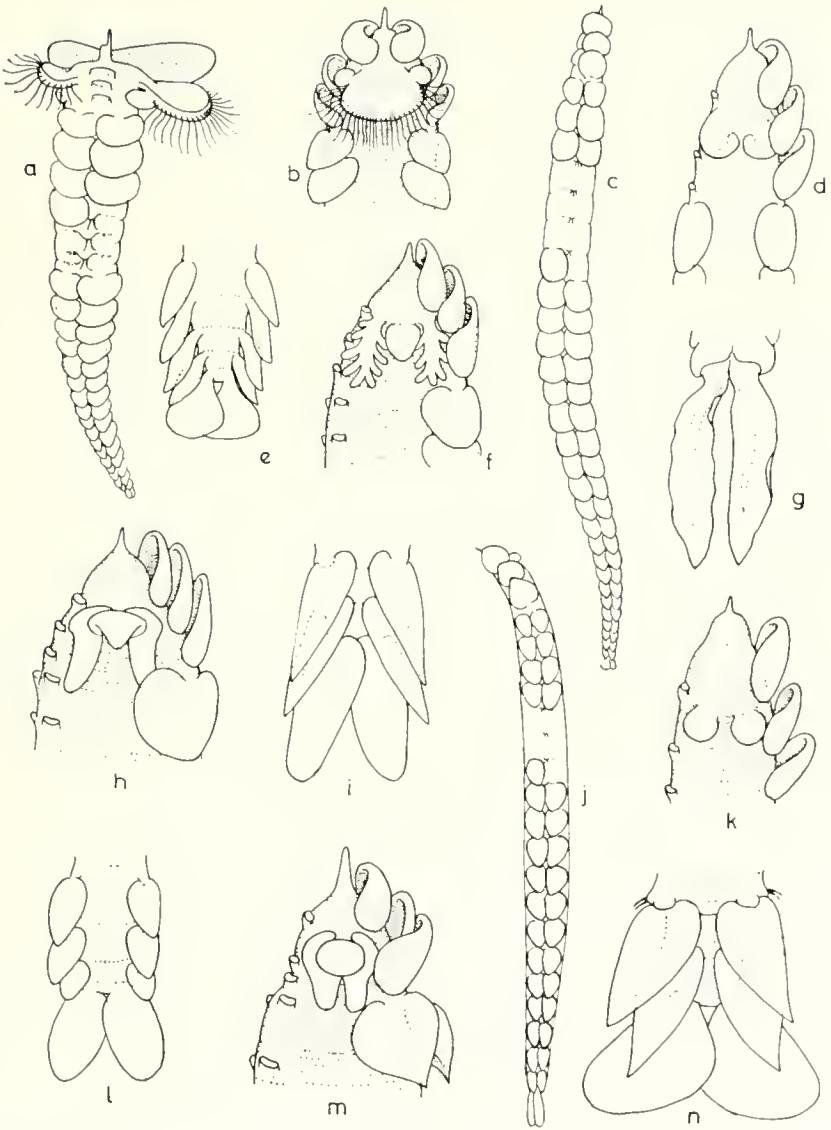

Fig. 9.1. *Typhloscolex muelleri.* (A) Lateral view of entire worm (25 times life size). (B) Dorsal view of head. *Sagitella kowalewskii.* (C) Lateral view of entire worm (eight times life size). (D) Dorsal view of head. (E) Tail end. *Travisiopsis coniceps* (after Monro, 1936, fig. 16.B). (F) Dorsal view of head. (G) Tail end. *Travisiopsis lanceolata.* (H) Dorsal view of head. (I) Tail end. *Travisiopsis dubia.* (J) Lateral view of entire worm (14 times life size). (K) Dorsal view of head. (L) Tail end. *Travisiopsis lobifera.* (M) Dorsal view of head. (N) Tail end.

lobes. Setigerous lobes and setae prominent. Dorsal and ventral cirri cordate anteriorly but more pointed posteriorly. Anal cirri spathulate with a strengthening rib (fig. 9.1.g).

TYPE LOCALITY: Pacific, off Peru.

RECORDS: S.E. Atlantic (33/15/p); Mocambique Current (21/40/p).

DISTRIBUTION: A deep water species from the South Atlantic, Antarctic and Pacific from California to Peru.

Travisiopsis lanceolata Southern, 1910
(fig. 9.1.h–i)

Travisiopsis lanceolata Southern, 1910: 429; Southern, 1911: 30, pl. 1 figs. 3, 5 and 6; Fauvel, 1923: 229, fig. 86 e–g; Stop-Bowitz, 1948: 58, fig. 45.

Body fusiform, up to 30 mm. long with a head region of three segments each bearing a single pair of reniform lamellar cirri enfolding the head and 19 body segments with both dorsal and ventral cirri. Prostomium (fig. 9.1.h) conical with a stout palpode. Caruncle with a transversely oval base produced back as a freely projecting tongue-shaped lobe, the whole forming a broad T. Nuchal organs in the form of ridges embracing the caruncle and extending back as a pair of free digitiform lobes twice as long as the caruncle. Dorsal and ventral cirri quadrangular to cordate in the middle of the body but elongated posteriorly so that the last few pairs are lanceolate. Anal cirri (fig. 9.1.i) ovate-lanceolate, broader basally than distally and strengthened by a median rib.

TYPE LOCALITY: South-west Ireland.

RECORDS: S.E. Atlantic (35/13/p); doubtful records of juveniles from Agulhas Current (29/32/p and 31/32/p).

DISTRIBUTION: North Atlantic; temperate South Atlantic (in deep tows); North Pacific.

Travisiopsis dubia Stop-Bowitz, 1948
(fig. 9.1.j–l)

Travisiopsis dubia Stop-Bowitz, 1948: 60, fig. 48 a–e; Tebble, 1962: 414, fig. 20
? *Sagitella cornuta* Ehlers, 1913: 527, pl. 39 figs. 8–14.

A small elongate species (fig. 9.1.j) about 6 mm. long with a head region of three segments each bearing a single pair of cordate lamellar cirri and a body region of 19–25 segments with both dorsal and ventral cirri. Generally similar to *Sagitella* but with fewer segments and the body more opaque and internal septa not visible. Prostomium (fig. 9.1.k) conical, swollen dorsally with an anterior palpode but without a projecting caruncle. A pair of freely projecting, rounded nucal lobes. Dorsal and ventral cirri cordate in the middle of the body but more longate posteriorly. Setae where present, minute. Anal cirri (fig. 9.1.l) oval without an obvious midrib.

Type locality: North Atlantic (39°30N/49°42W).

Records: Agulhas Current (29/31/p to 35/22/p – 15 stations); Mocambique Current (12/48/p to 28/39/p – eight stations); S.W. Indian Ocean (32/36/p and 36/36/p).

Distribution: North Atlantic; North Pacific.

Travisiopsis lobifera Levinsen, 1885
(fig. 9.1.m–n)

Travisiopsis lobifera Levinsen, 1885: 336, figs. 17–20; Fauvel, 1923: 229, fig. 86 a–d; Stop-Bowitz, 1948: 57, fig. 44.

Body fusiform, up to 25 mm. long with three head segments each bearing a pair of lamellar cirri and 18 segments with both dorsal and ventral cirri. Prostomium (fig. 9.1.m) conical with a large anterior palpode. Dorsal surface of head swollen to form an oval caruncle, but a freely projecting lobe is absent. Nuchal organs as a pair of semicircular ridges embracing the caruncle and continuous with a pair of digitiform posterior lobes. Dorsal and ventral cirri cordate in the middle of the body but become pointed posteriorly. Anal cirri (fig. 9.1.n) subtriangular and expanded distally, about as broad as long. Setigerous lobes and setae well marked on posterior segments.

Type locality: North Atlantic (42°50′N/46°10′W).

Records: S.E. Atlantic (34/16/p); S.W. Indian Ocean (26/37/p, 34/34/p).

Distribution: Temperate and tropical North and South Atlantic; temperate to subtropical Pacific.

Travisiopsis levinseni Southern, 1910

Travisiopsis levinseni Southern, 1910: 429; Southern, 1911: 32, pl. 2 figs. 7–11; Stop-Bowitz, 1948: 59, fig. 47.

Body fusiform, up to 24 mm. long with three head segments each bearing one pair of lamellar cirri and 22 body segments with both dorsal and ventral cirri. Prostomium conical with a small palpode. Caruncle flattened, almost rectangular, without any free lobe. Nuchal organs as a pair of short, semicircular, freely projecting lobes whose bases extend forward as narrow ridges on either side of the caruncle to join a pair of small wart-like lobes. Three pairs of lamellar cirri enfold the head. Dorsal and ventral cirri of body segments cordate with a broad area of attachment. Posterior cirri become long and tapered. Anal cirri ovate-triangular being narrower proximally than distally.

Type locality: 53°07′N/15°06′W (off Ireland).

Records: Doubtful records in S.E. Atlantic (33/15/p, 34/16/p); just south of subtropical convergence (40/32/p, 39/29/p, 39/27/p).

Distribution: A deep water species in temperate North Atlantic, South Atlantic, subantarctic, Antarctic, North Pacific off California.

Family **PILARGIDAE** St. Joseph, 1899

Elongate errant polychaetes with rather flattened bodies. Prostomium small, typically with a pair of biarticulate palps and two to three antennae. Proboscis eversible and unarmed except in the genus *Talehsapia*. Peristomium apodous and achaetous but usually with two pairs of tentacular cirri which lack internal acicula. Parapodia uniramous or if biramous the notopodial lobe is small. Dorsal and ventral cirri usually present. Setae always simple, the notopodium often lacking setae but having a heavy projecting acicular spine or hook; the neuropodium always with simple serrated setae. Pygidium with a pair of anal cirri or a saucer-shaped plate.

Records from southern Africa

Ancistrosyllis constricta Southern	45Ni
Ancistrosyllis rigida Fauvel	—Nd
Ancistrosyllis robusta Ehlers	15As
Ancistrosyllis parva Day	56Cs
Loandalia aberrans Monro	37As
Loandalia capensis Day	56Cs
Pilargis falcata Day	45Pi

BIOLOGICAL NOTES

The pilargids are a small group of carnivorous or omnivorous worms living on muddy sand in warm seas. *Ancistrosyllis* has well developed head appendages and creeps on the surface; *Pilargis* has reduced head appendages and *Loandalia* with its microscopic head appendages and parapodia, is almost certainly a burrower. The stout acicular notosetae which are often shaped like fish hooks are puzzling. They certainly become attached to fleshy objects very readily and it is possible that they are used to anchor the worm in some way.

THE MAIN DIAGNOSTIC CHARACTERS

The family Pilargidae is related to the Hesionidae from which it is distinguished by the absence of acicula in the tentacular segments, the entire absence of compound setae and usually the lack of jaws. Only five genera are recognised and they are rare but widely distributed. A valuable review is given by Hartman (1947a). Generic distinctions are based mainly on the nature of the head appendages and specific characters include the size of the antennae, the development of the parapodia, the nature of the acicular notosetae and the presence or absence of surface papillae. The aberrant genus *Talehsapia* is included with hesitation and *Cabira* is a very doubtful genus. Neither have been reported from southern Africa.

KEY TO GENERA

1 Prostomium with two or three antennae 2
– Prostomium without antennae 3
2 Prostomium with three antennae (fig. 10.1.f). Proboscis muscular *ANCISTROSYLLIS* (p. 215)
– Prostomium with two small antennae (fig. 10.1.k). Proboscis epithelial *PILARGIS* (p. 218)
3 Palps absent. Proboscis with jaws . . . . . *TALEHSAPIA**
– A pair of small palps. Tentacular cirri small or absent. No jaws . *LOANDALIA* (p. 219)

ANCISTROSYLLIS McIntosh, 1879

Body elongate and rather flattened. Prostomium with three antennae and two biarticulate palps having small palpostyles. Eyes small or absent. Pharnyx unarmed. Two pairs of tentacular cirri. Notopodia vestigial but each with a stout spine or projecting hook after the first few; neuropodia well developed with simple setae and sometimes a few forked ones as well.

Type species: *Ancistrosyllis groenlandica* McIntosh, 1879.

Key to Species

1 Specialised notosetae are stout spines . . . . . ***A. rigida***
– Specialised notosetae are stout hooks 2
2 Notopodia of middle segments with setae as well as stout hooks. (No ventral cirrus on setiger 2) . . . . . ***A. constricta***
– Notopodia of middle segments without setae apart from a stout hook 3
3 Notopodial hooks appear within the first 10 feet 4
– Notopodial hooks appear after setiger 60 . . . . . ***A. robusta***
4 Body papillose. Antennae very short . . . . . ***A. groenlandica****
– Body smooth. Antennae elongate . . . . . ***A. parva***

Ancistrosyllis rigida Fauvel, 1919*

Ancistrosyllis rigida Fauvel, 1919: 373, fig. 4: Hartman, 1947: 498, pl. 62 figs. 1–7: Fauvel, 1953: 110, fig. 53.

Body slender, wiry, up to 35 mm. long. Prostomium small, sometimes retracted with three small, subequal fusiform antennae and a pair of large palps with minute palpostyles. Tentacular segment distinct and equal to the setigerous segments; it bears two pairs of short tentacular cirri similar to the antennae. Subsequent segments all similar and muscular with small lateral parapodia. The notopodium is reduced to a fusiform dorsal cirrus with an internal aciculum and, from the 12th–20th setiger onwards, a heavy projecting spine with a blunt tip. It is merely slightly curved, never hooked. The neuropodium is a small truncate setigerous lobe with a fusiform ventral cirrus slightly smaller than the dorsal one; the latter is present on all segments including the second. The neurosetae include one to two short forked setae and several capillaries with a minutely spinulose margin.

Type locality: Red Sea.

Records: Natal (29/31/d).

Distribution: Circumtropical (i, s).

Ancistrosyllis cf. *constricta* Southern, 1921
(fig. 10.1.a–c)

Ancistrosyllis cf. *constricta* Southern, 1921: 573, pl. 19 figs. 1 A–G; Day, 1957: 71, fig. 2 a–d.

Juveniles which may belong to *A. constricta* Southern 1921 are 3–4 mm. long with 36 setigers. Prostomium (fig. 10.1.a) with three cirriform antennae and two pairs of eyes. Palps massive, bent ventrally and bear slender palpostyles. Pharynx

* While this monograph was in the press, Dr. M. H. Pettibone (1966 *Proc. U.S. Nat. Mus.* **118** (3525), 155–208) published an important revision of the Pilargidae in which she showed that *Aneistrosyllisrigida* is a synonym of *Synelmis albini* (Langerhans 1881)

muscular but without jaws. Peristomium distinct from prostomium and bears two pairs of tentacular cirri. No constricted neck region. Each setiger with tapered dorsal and ventral cirri and a blunt seligerous lobe. No ventral cirris on setiger 2. Typical notopodia (fig. 10.1. b) with an aciculum, one to fine capillaries and a stout recurved hook which first appears on setiger 8. Neurosetae are serrated capillaries (fig. 10.1.c).

TYPE LOCALITY (of *A. constricta*) : Chilka Lake, India.

RECORDS : Natal (29/31/i) – two specimens.

DISTRIBUTION : ? India (e).

Ancistrosyllis robusta Ehlers, 1908
(fig. 10.1.d–e)

Ancistrosyllis robusta Ehlers, 1908 : 59, pl. 6 figs. 4–7.

Body colourless and elongate, reaching 54 mm., with 182 segments. Prostomium (fig. 10.1.d) broader than long, rounded in front, and with three slender antennae, the median antenna reaching back to setiger 5. Palps stout with knob-shaped palpostyles. Pharynx short and stout and the mouth entrance is encircled by 16 ovoid papillae. Peristome distinct with two pairs of tentacular cirri similar to the antennae but shorter. Dorsal cirrus of setiger 1 twice the length of the tentacular cirri ; parapodial lobe and setae present (not shown in Ehler's figure). Ventral cirrus much shorter. Subsequent parapodia (fig. 10.1.e) each with a tapered dorsal cirrus, an ovoid neuropodial lobe and a shorter ventral cirrus. Presence of a ventral cirrus on setiger 2 doubtful. A fine aciculum in each anterior dorsal cirrus but from setiger 70 this is replaced by a stout projecting hook. Neuropodial setae are capillaries of varying length, the shorter ones finely serrated, the longer ones smooth.

TYPE LOCALITY : Great Fish Bay, Angola.

RECORDS : Not recorded from southern Africa.

Ancistrosyllis parva Day, 1963*
(fig. 10.1.f–j)

Ancistrosyllis parva Day, 1963a : 395, fig. 3 g–k.

Body (fig. 10.1.g) about 10 mm. long, flattened and tapered. Prostomium (fig. 10.1.f) broader than long with the posterior margin straight. Palps very wide with minute palpostyles. No eyes. Antennae equal to half the peristomial width, the median being slightly longer than the laterals. Proboscis with 10–12 marginal papillae of which the dorsal ones are slightly larger. Tentacular cirri similarly to the antennae, the ventral pair being slightly shorter. Body smooth with rather crowded segments anteriorly but longer ones posteriorly. First setiger with the dorsal cirrus

* Referred to the genus *Sigambra* by Pettibone (1966) – see footnote on p. 215.

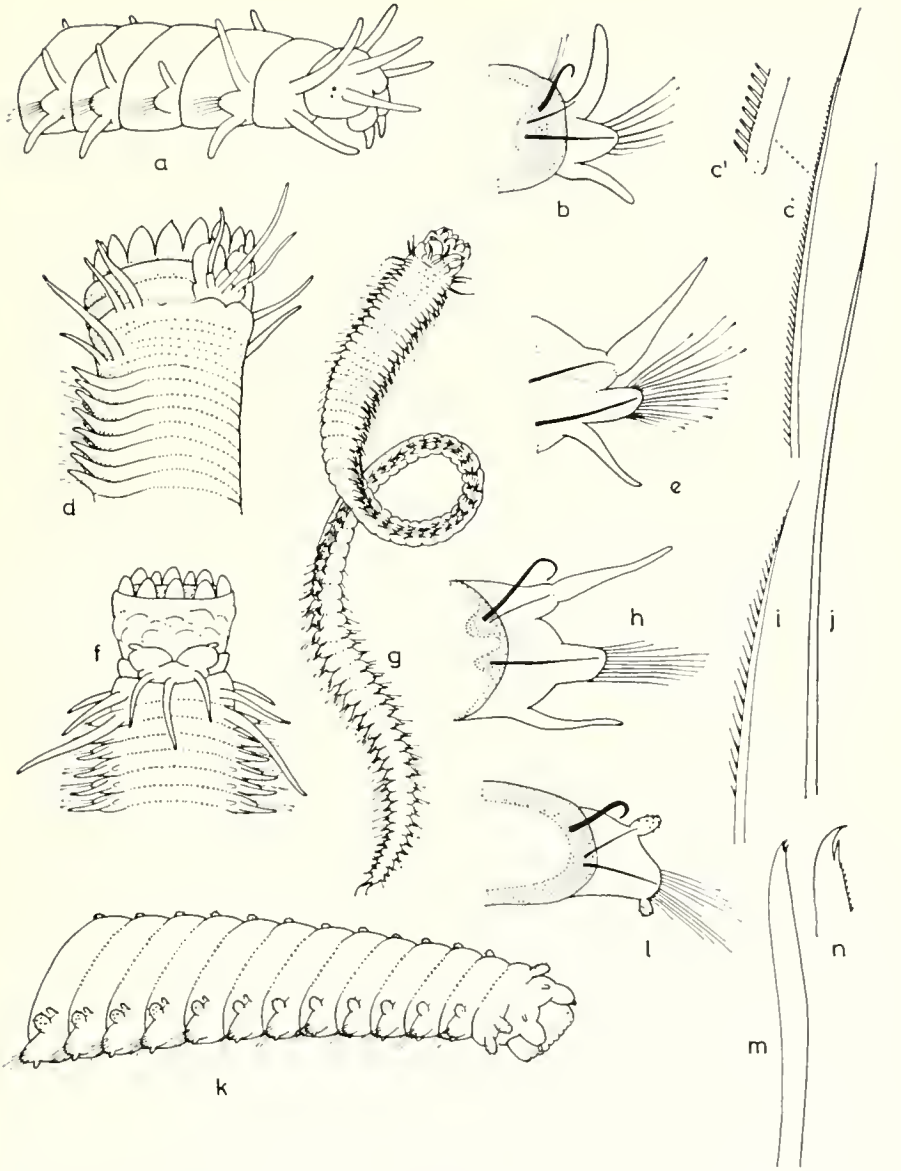

FIG. 10.1. *Ancistrosyllis* cf. *constricta*. (A) Anterior end. (B) Ninth foot. (C, C[1]) Saw-edged capillary seta. *Ancistrosyllis robusta* (after Ehlers, 1913). (D) Anterior end. (E) Forty-fourth foot. *Ancistrosyllis parva*. (F) Anterior end. (G) Entire worm (12 times life size). (H) Tenth foot. (I) Short outer neuroscta. (J) Long central neuroseta. *Pilargis falcata*. (K) Anterior end. (L) Tenth foot. (M) Blade of longer neuroseta. (N) Enlarged view of tip of shorter neuroseta.

longer than the tentacular cirri, a normal setigerous lobe and a ventral cirrus. Second setiger with a short dorsal cirrus and no ventral cirrus. Posterior feet (fig. 10.1.h) all essentially similar with a tapered dorsal cirrus borne on a stout cirrophore, a square setigerous lobe and a smaller ventral cirrus. Notosetae absent from setigers 1–3; from setiger 4 onwards a stout hook appears above the dorsal cirrophore but there are never any notopodial capillaries. Neuroseta are all simple capillaries, the short outer ones with spinulose blades (fig. 10.1.i) and the longer central ones with smooth blades (fig. 10.1.j). *Ancistrosyllis tentaculata* Treadwell is similar but the prostomium is excavate posteriorly. *A. groenlandica* McIntosh 1879 has a papillose body.

Records: Cape (34/18/s to 33/25/s); Natal (29/31/s, d to 30/30/s).

Distribution: endemic.

PILARGIS St. Joseph, 1899

Body elongate and rather flattened. Prostomium with a pair of biarticulate palps with large palpophores and small palpostyles. A pair of small antennae on the antero-lateral margins of the prostomium. Proboscis soft and epithelial and lacks jaws. Peristome with two pairs of tentacular cirri. Parapodia with the notopodium reduced to a dorsal cirrus, an aciculum and sometimes setae. A well developed neuropodium with a setigerous lobe and a ventral cirrus. Neurosetae simple.

Type species: *Pilargis verrucosa* St. Joseph, 1899.

Pilargis falcata Day, 1957
(fig. 10.1.k–n)

Pilargis falcata Day, 1957: 70, fig. 2 e–h.

Body about 50 mm. long for 150 segments, very fragile, flattened and tapered anteriorly. Prostomium (fig. 10.1.k) broader than long with a pair of minute antennae, a small pair of eyes and a pair of large palps with small palpostyles. Pharynx soft and unarmed. Peristome with two pairs of fusiform and papillose tentacular cirri. Parapodia (fig. 10.1.l) with ovoid and papillose dorsal cirri, truncate setigerous lobes and small ventral cirri. Cirri present on all feet. Notosetae absent from the first six feet but from the seventh foot onwards each has a single large recurved hook. Neurosetae (fig. 10.1.m) are sabre-shaped each with a hooked tip and a minute secondary tooth. Small interior setae have minutely serrated blades (fig. 10.1.n).

Type locality: Delagoa Bay, Portuguese East Africa.

Records: Mocambique (26/32/i and 23/35/e) – not common.

LOANDALIA Monro, 1936

Body elongate. Prostomium without eyes or antennae but with a pair of biarticulate palps. Pharynx unarmed. Peristome with or without tentacular cirri. Notopodia reduced; notosetae represented by a stout acicular hook with or without capillary setae. Neuropodia conical with a ventral cirrus and serrated capillary setae. Pygidium with a papillose anal plate.

Type species: *Loandalia aberrans* Monro 1936.

Key to Species

1 Tentacular cirri absent. Digitiform branchiae behind the posterior neuropodia (fig. 10.2.f) ***L. aberrans***

– Two pairs of small tentacular cirri (fig. 10.2.a). Branchiae absent . . ***L. capensis***

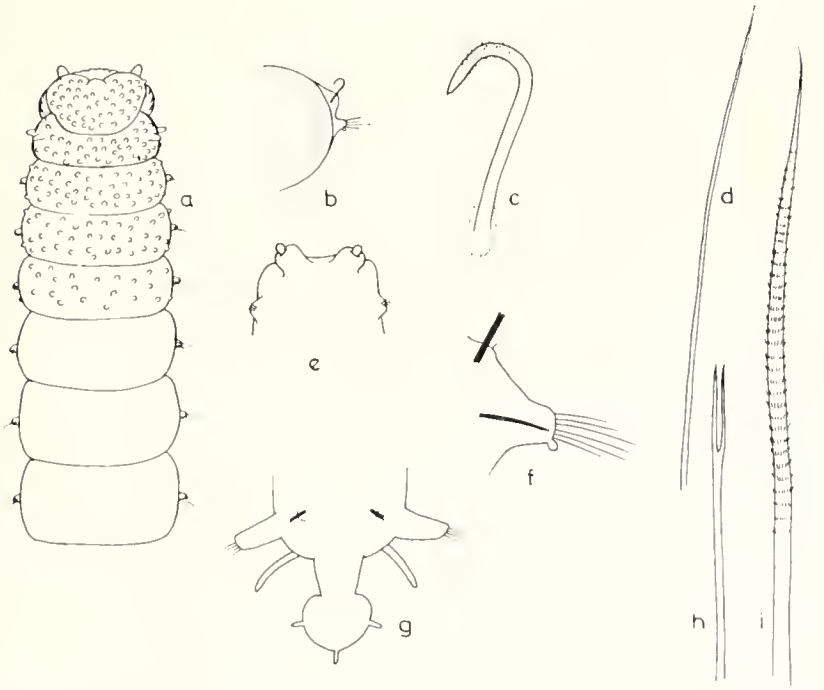

Fig. 10.2. *Loandalia capensis*. (a) Anterior end. (b) Tenth foot. (c) Notopodial hook. (d) Neuropodial capillary. *Loandalia aberrans* (after Monro, 1936). (e) Head. (f) Anterior parapodium. (g) Posterior end. (h) Minute notoseta (fork doubtful). (i) Neuropodial capillary.

Loandalia capensis Day, 1963
(fig. 10.2.a–d)

Loandalia capensis Day, 1963a: 396, fig. 4 a–d.

Body about 15 mm. long with more than 56 segments. Segments twice as broad as long with deep intersegmental constrictions between them. Head and first three setigers (fig. 10.2.a) with conical papillae. Prostomium ill-defined with a pair of stout biarticulate palps but no eyes or antennae. Proboscis soft and unarmed. Peristomial segment with two pairs of small tentacular cirri not much larger than the papillae. Each of the first seven segments with a small conical notopodium, but no notoseta. A stout notopodial hook appears in setiger 8, so that all later segments are biramous with an aciculum and a stout recurved hook (fig. 10.2.c) with a granular tip in the rudimentary notopodium (fig. 10.2.b). Neuropodium low and conical with a papilliform ventral cirrus below the apex and three to four slender capillaries (fig. 10.2.d) which are either smooth or minutely serrate on one margin. No branchiae. Pygidium unknown.

Type locality: Agulhas Bank, South Africa.

Records: 34/23/s – only two specimens known.

Loandalia aberrans Monro, 1936
(fig. 10.2.e–i)

Loandalia aberrans Monro, 1936: 193, fig. 34 a–h.

Body cylindrical and elongate and reaches 35 mm. for 110 setigers. Colour yellowish with brown markings. Prostomium (fig. 10.2.e) broader than long, lacks eyes and antennae but has a pair of small biarticulate palps. Pharynx muscular but unarmed. Peristome not distinct from the prostomium and lacks tentacular cirri. Notopodia absent from the first six setigers and reduced to button-like projections on the remainder. Notosetae represented by a stout acicular hook (broken in the holotype) plus a few minute simple setae which are possibly forked (fig. 10.2.h). Neuropodia (fig. 10.2.f) well developed, bluntly conical in shape and each bears an aciculum plus a few simple capillaries with many transverse rows of spinules (fig. 10.2.i). A small papilliform ventral cirrus. Pygidium (fig. 10.2.g) as a rounded plate bearing three papillae. Simple digitiform gills behind the neuropodia in posterior segments.

Type locality: Dredged off Angola.

Records: Not recorded from southern Africa.

Distribution: Angola (s).

Family **HESIONIDAE** Malmgren, 1867

Errant polychaets with short, often cylindrical bodies composed of few segments. Prostomium rounded or cordiform with four eyes, two frontal antennae and often a median dorsal one as well. One pair of biarticulate palps is usually present. Proboscis large and muscular occasionally with jaws or teeth. The first one to four segments are short and usually fused to the prostomium; they are apodous but their dorsal and ventral cirri remain to form two to eight pairs of tentacular cirri which always have internal acicula. Normal body segments are either biramous or uniramous with the notopodium reduced to a dorsal cirrus with an internal aciculum in its cirrophore. Dorsal cirri often long and jointed. Notosetae when present are simple. Neurosetae are always compound and usually falcigerous though the blade may be long and tapered.

Records from southern Africa

Gyptis capensis (Day)	
as *Oxydromus capensis* Day	56Csd
Gyptis sp.	
as *Oxydromus* sp.	26Ai
Hesione splendida Savigny	1Pi, 53Mi
as *Hesione genetta* Grube	27Mi
as *Hesione pantherina* Risso	32Pi, 40Pi, 45Ni, Pi
Kefersteinia cirrata (Keferstein)	50Cs
Leocrates claparedii (Costa)	36Ni, 40Ni, 45Pi, 53Mi
Ophiodromus angustifrons (Grube)	—Ns
Ophiodromus spinosus (Ehlers)	
as *Orthrodromus spinosus* Ehlers	15As
Ophiodromus agilis (Ehlers)	
as *Podarke agilis* Ehlers	? 45Ni
Ophiodromus berrisfordi Day	Wi (new record)
Syllidia armata Quatrefages	15Ci, 26Ai, Wis, 41Ci, 50Cs
Syllidia capensis (McIntosh)	
as *Magalia capensis* McIntosh	32Cd

BIOLOGICAL NOTES

The hesionids are closely related to the pilargids and both families are intermediate between the nereids and the syllids. The hesionids are very active and some at least are undoubtedly carnivorous. *Hesione* for example has been observed to swallow part of a *Marphysa* almost as large as itself. Both *Hesione* and *Leocrates* are large stout worms found under stones and dead coral and both have beautiful iridescent colours. *Syllidia* which is banded in yellow and green and *Kefersteinia* which is purple when full of eggs are often found among dead shells on rocky shores.

THE MAIN DIAGNOSTIC CHARACTERS

Useful reviews of the family will be found in Fauvel (1923) and Hessle (1925). The individual genera and species are well defined. Specific characters include the

nature of the head appendages and proboscis and to a lesser degree the structure of the parapodia and setae.

The prostomium is bilobed with two or three antennae and typically a pair of palps. The median antenna may arise from a posterior notch or from the anterior margin or may be entirely absent. Difficulty may be caused by the fact that the median antenna falls off easily and in *Leocrates* a stout proboscial tubercle arises immediately in front of the head simulating an additional antenna; in *Hesione* the same papilla is well forward on the proboscis. The palps are present in all genera except *Hesione*. In *Microphthalmus* and *Parahesione* the palps are said to be simple though this may be doubted; in all other genera the palps are two-jointed and there is considerable variation in the relative lengths of the palpophore and palpostyle.

The proboscis is a muscular eversible structure often with a ring of marginal papillae at its entrance and occasionally with a dorsal tubercle. In *Syllidia* there is a pair of ventro-lateral toothed jaws with a median styliform tooth between them; the so-called jaws of other genera are in the form of a median tooth. Paragnaths such as are found in the Nereidae are never developed.

Tentacular segments and tentacular cirri. The Hesionidae show varying degrees of cephalisation. In *Orseis* there is only a single peristomial segment behind the prostomium and its elongated dorsal and ventral cirri form two pairs of tentacular cirri with acicula in their cirrophores. In *Syllidia* there are three such segments and six pairs of tentacular cirri and in *Leocrates* there are four segments and eight pairs of tentacular cirri. The tentacular segments show varying degrees of fusion and the cirri may be irregularly arranged.

Parapodia. The different genera show varying degrees of reduction of the notopodium. In *Ophiodromus* the notopodium is always well developed; in *Leocrates* the posterior parapodia are biramous with small notopodia but the first four parapodia are uniramous with only an aciculum in the dorsal cirrophore to show what has happened to the notopodium. The dorsal cirri may be strongly annulated, vaguely annulated or smooth. The neuropodium often has a presetal papilla sheathing the end of the aciculum and a postsetal lip; the shape of the end of the neuropodium thus provides useful characters.

The setae. The notosetae are always simple and often tapered capillaries; in some cases one margin is minutely spinulose. Some species have forked notosetae but the appearance of these gives a suspicious impression of being due to splitting so that their presence or absence is not reliable. The neurosetae are all compound and falcigerous though the blades may be very long and fine giving a spinigerous effect. The tips are bidentate with a terminal hooked tooth and a splinter-shaped tooth directed towards it or tridentate with two strong teeth and the same splinter-shaped one.

Colour. Hesionids are beautifully iridescent with purples and greens but it is doubtful whether these colours have taxonomic value since they fade in alcohol.

Key to Genera

1	Two pairs of tentacular cirri. (Three antennae)	*ORSEIS**
–	Six pairs of tentacular cirri	2
–	Eight pairs of tentacular cirri	6
2	Two antero-lateral antennae plus one median one	3
–	Only two antero-lateral antennae	4
3	Palps not jointed (?). Pygidium with an anal plate. Notosetae absent	*MICROPHTHALMUS**
–	Palps jointed. No anal plate. Notopodial capillaries often present	*OPHIODROMUS* (p. 000)
4	A pair of ventro-lateral toothed jaws and a slender midventral tooth (fig. 11.1.h). No notosetae	*SYLLIDIA* (p. 000)
–	Toothed jaws absent. Notosetae often present	5
5	Palps not jointed (?). Notopodia well formed with numerous capillary setae	*PARAHESIONE**
–	Palps two-jointed. Notopodia reduced to an aciculum in the dorsal cirrophore and sometimes a few setae	*NERIMYRA**
6	Palps absent. (Two antennae. Jaws absent)	*HESIONE* (p. 000)
–	Two biarticulate palps	7
7	Two antennae. Jaws absent. Parapodia uniramous and notosetae absent	*KEFERSTEINIA* (p. 000)
–	Three antennae. Parapodia biramous and notosetae present	8
8	A dorsal and a ventral tooth present	*LEOCRATES* (p. 000)
–	Teeth and jaws absent.	9
9	Proboscis with a circle of papillae. Dorsal cirri jointed	*GYPTIS* (p. 000)
—	Proboscis without papillae. Dorsal cirri unjointed	*AMPHIDUROS**

OPHIODROMUS Sars, 1861
(Synonym *PODARKE* Ehlers, 1864)

Prostomium bilobed with four eyes, three antennae and a pair of biarticulate palps. Proboscis unarmed and without marginal papillae. Six pairs of tentacular cirri. Parapodia biramous with well developed notopodia and jointed dorsal cirri. Notosetae capillary, neurosetae compound and falcigerous.

Type species: *Nereis flexuosa* Della Chiaje, 1825.

Key to Species

1	Notosetae numerous	2
–	Notosetae either absent or only one or two	3
2	Notosetae are all capillaries. Median antenna equal to laterals	*O. spinosus*
–	Notosetae include forked setae as well as capillaries. Median antenna minute	*O. angustifrons*
3	No notosetae. Median antenna minute	*O. berrisfordi*
–	Notosetae as one or two capillaries. Median antenna well developed	*O. agilis*

Ophiodromus spinosus (Ehlers, 1908)
(fig. 11.1.a–d)

Orthrodromus spinosus Ehlers, 1908: 61, pl. 7 figs. 1–7.

Body 8 mm. long for 30 segments. Prostomium (fig. 11.1.a) broad, bilobed and sunk between the anterior segments. Two pairs of eyes. Antennae and palps very similar, the latter not obviously jointed. Proboscis with long marginal papillae but

no jaws. Peristome and the next two segments almost fused, achaetous and apodous, their dorsal and ventral cirri forming six pairs of tentacular cirri. Normal parapodia (fig. 11.1.b) biramous with well developed notopodia bearing two cirriform appendages of which the longer superior one corresponds to the dorsal cirrus. Notosetae are fine capillaries. Neuropodium with a terminal cirriform appendage similar to the inferiorly placed ventral cirrus. Neurosetae (fig. 11.1.c and d) falcigerous with blades of varying length ending in bidentate tips.

TYPE LOCALITY: Great Fish Bay, Angola.

RECORDS: Not recorded from southern Africa.

DISTRIBUTION: Angola (s).

Ophiodromus berrisfordi sp. nov.

(fig. 11.3.a–c)

Body about 28 mm. long, flattened and tapered with 60 segments. Prostomium (fig. 11.3.b) rectangular, over twice as broad as long, with four eyes. Median antenna minute and papilliform; laterals tapered and about equal to the prostomial length. Palps slightly longer and biarticulate with pointed tips. Proboscis muscular and without jaws or marginal papillae. Six pairs of tapered tentacular cirri of varying length, each with a short cirrophore and a smooth, tapering cirrostyle. Parapodia uniramous and essentially similar throughout though the relative lengths of the dorsal cirrus and its cirrophore change over the first few feet. An average foot (fig. 11.3.c) has a stout, sausage-shaped cirrophore containing two fine, pale acicula, and a smooth tapered dorsal cirrus. There are no notosetae. Setigerous lobe stout with a digitiform presetal lobe, a low postsetal lip and a small ventral cirrus. Neurosetae (fig. 11.3.a) numerous and all compound and falcigerous. Shaft pointed and blade tapering and serrated; apex bidentate with a hooked terminal tooth below which is a curved guard giving the impression of a styliform tooth under low power.

TYPE LOCALITY: Walvis Bay, South West Africa.

RECORDS: 22/14/i.

DISTRIBUTION: No other records.

Ophiodromus angustifrons (Grube, 1878)

Irma angustifrons Grube, 1878: 108, pl. 6 fig. 7.
Podarke angustifrons: Fauvel, 1932: 63; Fauvel, 1953: 109, fig. 52 a–d.

Body somewhat flattened and tapered, up to 20 mm. long; pale in alcohol but brown with white rings in life. Prostomium rectangular, broader than long with a minute median antenna on the anterior margin and two larger laterals on either side. Palps biarticulate, slightly larger than the lateral antennae. Four eyes.

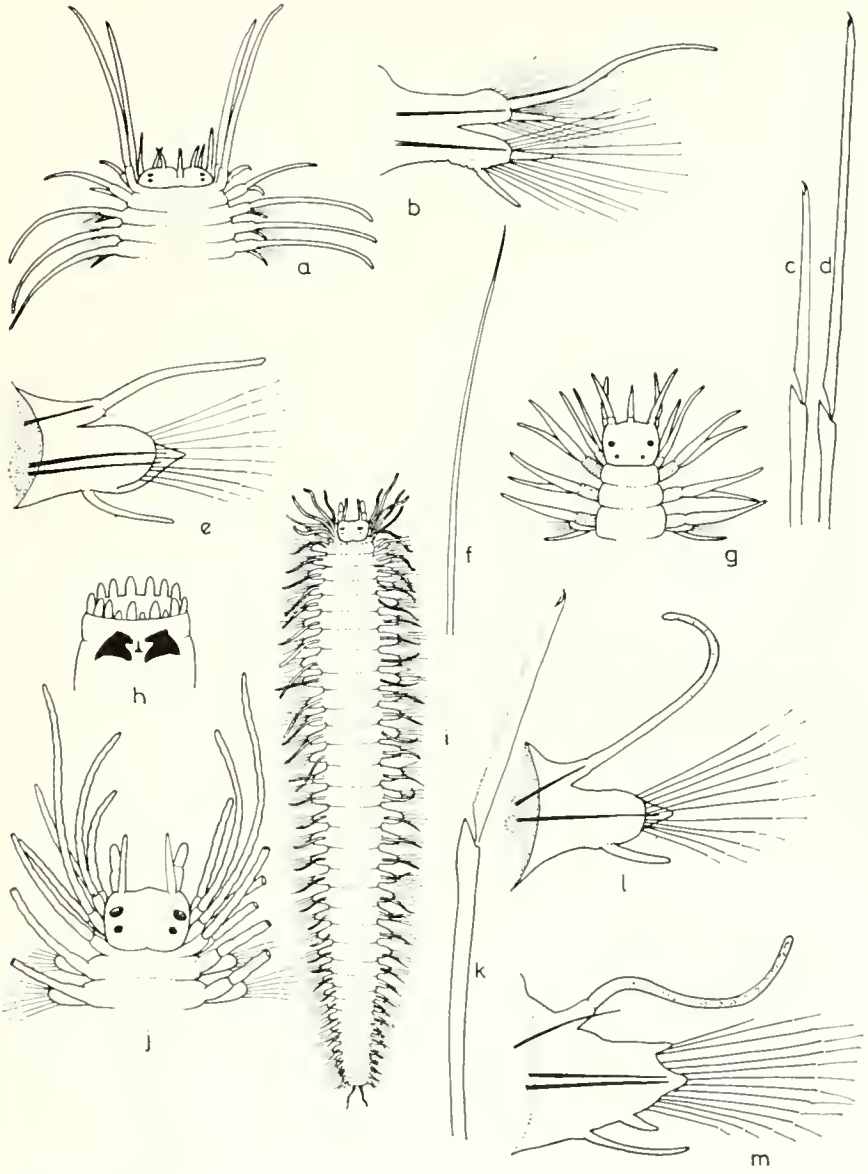

FIG. 11.1. *Ophiodromus spinosus* (after Ehlers, 1908). (A) Head. (B) Foot. (C) and (D) Inferior and superior neurosetae. *Ophiodromus agilis* (after Fauvel). (E) Foot. (F) Notoseta. (G) Head. *Syllidia armata*. (H) Proboscis. (I) Entire worm (10 times life size). (J) Head. (K) Inferior seta. (L) Foot. *Syllidia capensis* (after McIntosh, 1925). (M) Foot.

Proboscis unarmed but said to have marginal cilia. Six pairs of faintly ringed tentacular cirri on three fused segments. Body segments rather short, parapodia biramous but notopodia reduced. Dorsal cirri long, faintly ringed and mounted on ceratophores with internal acicula and a small tuft of notosetae. Neuropodia stout with a tapered presetal lobe and a low rounded postsetal lip. Ventral cirri subulate, about as long as the presetal lobes. Notosetae include several slender capillaries and a few forked setae with unequal prongs. Neurosetae all compound with falcigerous blades varying in length. The tip is minutely bidentate with a faint guard.

Type locality: Philippine Islands.

Records: Natal (29/31/s).

Distribution: Tropical Indo-west-Pacific.

Ophiodromus agilis (Ehlers, 1864)
(fig. 11.1.e–g)

Podarke agilis Ehlers, 1864: 197; Fauvel, 1923: 245, fig. 91 e–h; ? Day, 1957: 70.

Body about 4–5 mm. long with 16–22 setigers. Prostomium (fig. 11.1.g) square with four eyes, the anterior pair being slightly larger and wider apart. Median antenna fusiform and roughly equal to the prostomium; laterals similar in shape but longer. Palps elongate with short palpophores. Proboscis without papillae or jaws. Six pairs of fusiform tentacular cirri borne on ringed ceratophores. Notopodia (fig. 11.1.e) reduced to an aciculum, a single capillary seta and a vaguely ringed dorsal cirrus. Neuropodia with a triangular presetal lobe and a rounded postsetal lip. A slender ventral cirrus. Neurosetae falcigerous with long, finely bidentate blades.

Type locality: Adriatic.

Records: One doubtful record from Natal (29/32/i).

Distribution: Mediterranean.

SYLLIDIA Quatrefages, 1865

Body vermiform. Prostomium quadrangular with four eyes, two antennae and two biarticulate palps. Proboscis with a median ventral tooth and two lateral ones; margin papillose. Six pairs of tentacular cirri. Parapodia uniramous. Setae entirely compound and falcigerous.

Type species: *Syllidia armata* Quatrefages, 1865.

Key to Species

1 Foot with a single median presetal lobe (fig. 11.1.l) . . . . . ***S. armata***
– Foot with three presetal lobes (fig. 11.1.m) . . . . . ***S. capensis***

Syllidia armata Quatrefages, 1865
(fig. 11.1.h–l)

Syllidia armata Quatrefages, 1865: 13, pl. 8 figs. 10–15.
Magalia perarmata Marion & Bobretzky, 1875: 54, pl. 6 fig. 16, pl. 7 fig. 16; Fauvel, 1923: 246, fig. 92.

Body (fig. 11.1.i) small, less than 10 mm. long but rather broad with 26–35 setigers, greenish yellow in colour with transverse stripes which fade in alcohol. Prostomium (fig. 11.1.j) almost square with four eyes, two long antennae and two biarticulate palps. Proboscis (fig. 11.1.h) armed with a median ventral stylet and a pair of lateral jaws with serrated cutting edges; margin with 10–15 papillae. Six pairs of annulated tentacular cirri. Parapodia (fig. 11.1.l) uniramous, the notopodium being reduced to a dorsal cirrus with an aciculum in its cirrophore. Dorsal cirri long and faintly annulated. Neuropodium with a triangular presetal lip and a low rounded postsetal lamella. Setae (fig. 11.1.k) falcigerous with blades of variable length ending in a terminal hook below which is a very fine secondary tooth.

Type locality: La Rochelle, France.

Records: South West Africa (22/14/i and 26/15/s); Cape (32/17/s, 33/17/s, d, 34/18/i, s, 33/25/s) – common in some dredgings.

Distribution: Scotland (i, s), English Channel (i, s), Madeira, Senegal and Angola; Mediterranean.

Syllidia capensis (McIntosh, 1925)
(fig. 11.1.m)

Magalia capensis McIntosh, 1925: 41, pl. 5 fig. 2.

Body greyish, about 12 mm. long. Palps slightly tapered with an articulation at the distal third. Antennae unknown. Four eyes. Parapodia (fig. 11.1.m) uniramous, the notopodium being represented by a long dorsal cirrus with at least four "spines" in its cirrophore. Neuropodium with three pointed lobes of which the middle one is much larger than the other two. Ventral cirrus present. Neurosetae varying in length, those in the middle being the longest and ending in hair-like (?) tips while the inferior ones have minutely bidentate blades.

Type locality: 33°32 S/17°24 E in 448 fth.

Records: Cape (33/17/vd) – a single doubtful record.

HESIONE Savigny, 1818

Body short and stout with about 16 segments. Prostomium cordate with four eyes and two small antero-lateral antennae. No palps. A facial tubercle. Pharynx without jaws or marginal papillae. Eight pairs of tentacular cirri. Parapodia uniramous with compound, falcigerous setae only. Dorsal cirri jointed.

Type species: *Hesione splendida* Savigny, 1818.

Hesione splendida Savigny, 1818
(fig. 11.2.a–c)

Hesione splendida Savigny, 1818: 316.
Hesione pantherina Risso, 1826: 418; Fauvel, 1923: 233, fig. 87; Fauvel, 1953: 104, fig. 49.

Body 40–70 mm. long by 4–6 mm. broad, cylindrical and slightly tapered posteriorly. Prostomium (fig. 11.2.a) deeply notched posteriorly. Anterior pair of eyes larger and wider apart than the posterior pair. Two minute antero-lateral antennae. Pharynx wide and smooth with an ovoid dorsal tubercle in front of the prostomium but no jaws or marginal papillae. Tentacular cirri jointed and subequal and arranged in oblique rows 3,3,2. Dorsal cirri long, closely jointed and borne on long cirrophores strengthened by fine acicula. Setigerous lobe (fig. 11.2.b) stout with presetal and postsetal lips and a superior conical papilla. Setae (fig. 11.2.c) falcigerous with blades of varying length tipped with two strong teeth and a fine, straight accessory tooth below the secondary one. Ventral cirri indistinctly jointed and relatively short. Two long anal cirri.

Type locality: Red Sea.

Records: Mocambique (26/32.i and 23/35.e); Madagascar (s) – rare.

Distribution: Atlantic (coast of France (i) to Senegal (i, s)); Mediterranean (i, s); Red Sea (i) and tropical Indo-west-Pacific (i, s).

KEFERSTEINIA Quatrefages, 1865

Body elongate, rather flattened. Prostomium bilobed with four eyes, two lateral antennae and two biarticulate palps. Proboscis with filiform marginal papillae but without chitinous jaws. Eight pairs of jointed tentacular cirri. Parapodia uniramous, the notopodium being reduced to a dorsal cirrus with an internal aciculum. No notosetae. Neuropodium well developed with numerous long-bladed falcigerous setae. Ventral cirrus short. Two anal cirri.

Type species: *Psamathe cirrata* Keferstein, 1863.

Kefersteinia cirrata (Keferstein, 1863)
(fig. 11.2.d–f)

Psamathe cirrata Keferstein, 1862: 107, pl. 9 figs. 32–36.
Kefersteinia cirrata: Fauvel, 1923: 238, fig. 89 a–e.

Body 20–40 mm. long, fragile with 36–65 setigers. Colour yellow in ripe males and mauve in ovigerous females. Prostomium (fig. 11.2.d) broader than long with two long biarticulate palps, two filiform antennae, and four eyes of which the anterior pair is the larger. Proboscis without jaws but the margin is bordered with 40 fine papillae. Eight pairs of tentacular cirri arranged 3,3,2. Parapodia (fig. 11.2.e) uniramous, the notopodium being reduced to a long, jointed, dorsal cirrus with two

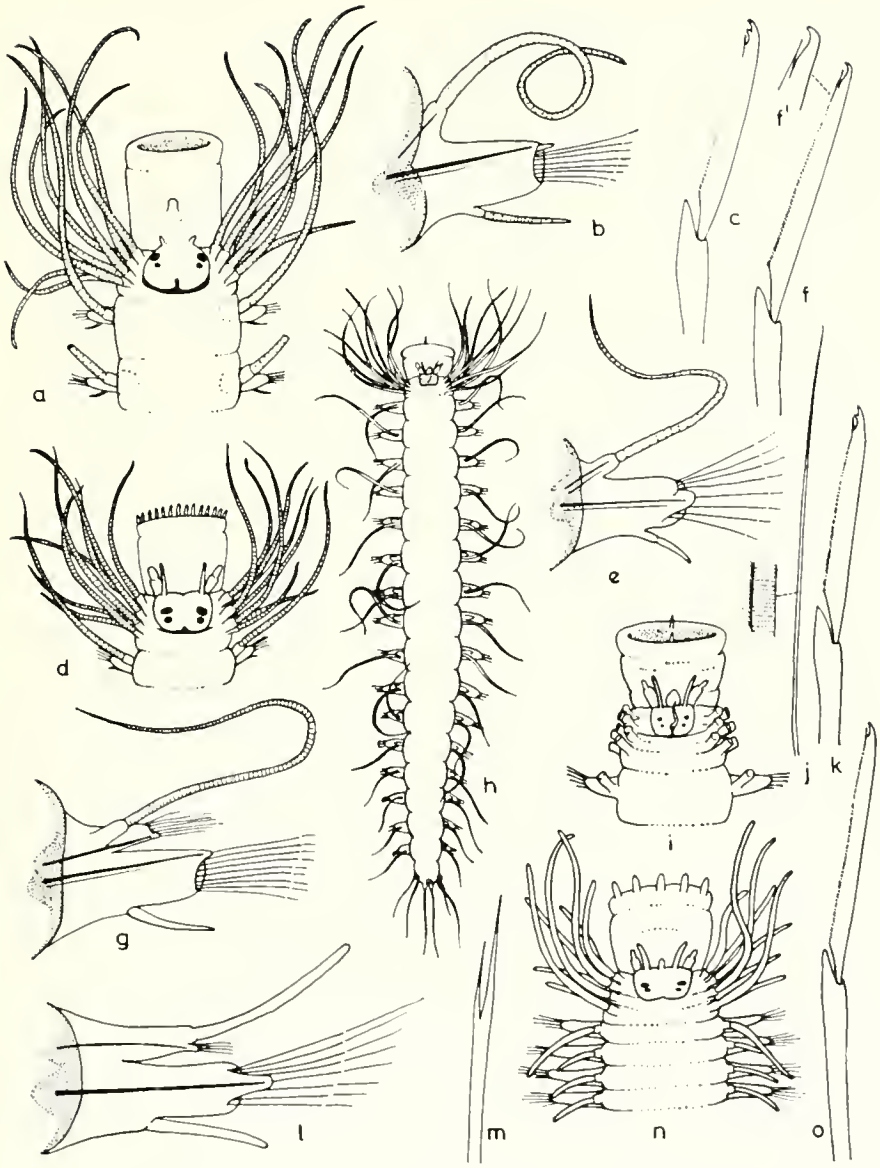

FIG. 11.2. *Hesione splendida.* (A) Head. (B) Foot. (C) Seta. *Kefersteinia cirrata.* (D) Head. (E) Foot. (F) Seta. *Leocrates claparedii.* (G) Tenth foot. (H) Entire worm (twice natural size). (I) Head. (J) Notoseta. (K) Neuroseta. *Gyptis capensis.* (L) Tenth foot. (M) Forked type of notoseta. (N) Head. (O) Neuroseta.

acicula in its cirrophore. Neuropodium long and stout and terminated by two unequal presetal lobes and a postsetal lip. Neurosetae (fig. 11.2.f) falcigerous with saw-edged blades of varying length, each ending in a curved tooth with a slender spine below.

Type locality: Southern France.

Records: Cape (34 18/s and 33/25/s); Natal (30/30/s).

Distribution: N. Atlantic from the North Sea (s), and English Channel (i, s) to Senegal (s); Mediterranean.

LEOCRATES Kinberg, 1866

Body short with few segments, often brightly coloured. Prostomium bilobed with four eyes, one dorsal and two anterior antennae and two biarticulate palps. Proboscis with a facial tubercle on its upper lip and dorsal and ventral teeth. Eight tentacular cirri. Parapodia mainly biramous, a small notopodium bearing a few simple capillaries appearing after the first few feet. Neuropodium large with falcigerous setae. Dorsal cirri jointed.

Type species: *Leocrates chinensis* Kinberg, 1866.

Leocrates claparedii (Costa, 1868)
(fig. 11.2.g–k)

Castalia claparedii Costa [in] Claparède, 1868: 539.
Leocrates claparedii: Fauvel, 1923: 237, fig. 88 i–n; Wesenberg-Lund, 1949: 271, fig. 10.

Body (fig. 11.2.h) stout and about 40–60 mm. long with 16–17 rounded setigers. Prostomium (fig. 11.2.i) bilobed with slender antennae and stout palps. A large ovoid facial tubercle immediately in front of the prostomium. Tentacular cirri long and closely annulated, the tentaculophores being strengthened by black acicula (fig. 11.2.g). Proboscis with a single stout styliform dorsal tooth and a single finer ventral tooth. Notopodial capillaries (fig. 11.2.j) appear on setiger 4 or 5 and are finely serrated distally. The falcigerous neurosetae (fig. 11.2.k) have blades ending in two teeth and a fine accessory tooth below the secondary one.

Type locality: Naples.

Records: Transkei (31/29/i) and Natal (30/30/i and 29/31/i, s) to Mocambique (26 32 i) and Madagascar (i, s) – not uncommon.

Distribution: Senegal (i); Mediterranean (s); Red Sea (i, s) and tropical Indo-west-Pacific (i, s).

GYPTIS Marion & Bobretzky 1875
(Synonym *OXYDROMUS* Grube, 1855 – preoccupied)

Body short. Prostomium with four eyes, three antenna and two biarticulate palps. Proboscis unarmed but with marginal papillae. Eight pairs of tentacular

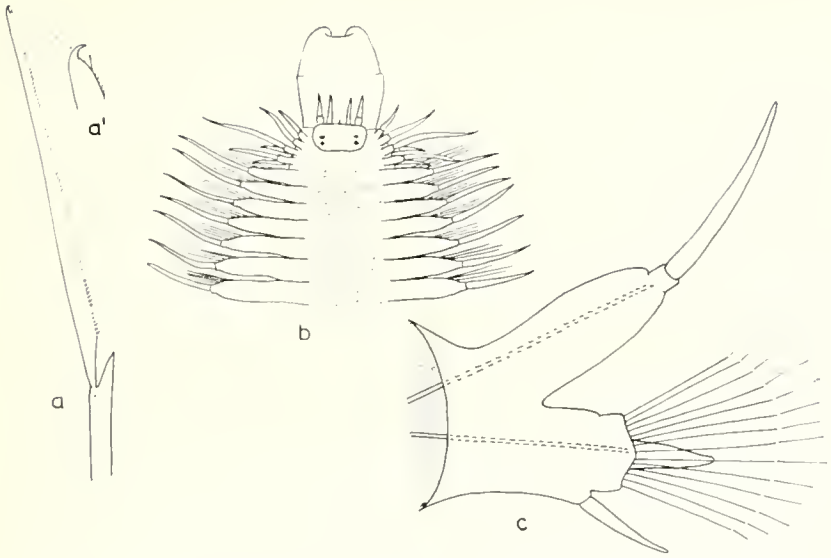

Fig. 11.3. *Ophiodromus berrisfordi*. (A) Seta. (B) Anterior end. (C) Posterior view of tenth foot.

cirri. Parapodia biramous but with reduced notopodia bearing a few capillary notosetae. Neuropodium large with falcigerous neurosetae.

Type species: *Gyptis propinqua* Marion & Bobretzky, 1875.

Gyptis capensis (Day, 1963)
(fig. 11.2.l–o)

Oxydromus capensis Day, 1963a: 397, fig. 4 e–j.

A small pale species about 10 mm. long with 50 segments. Prostomium (fig. 11.2.n) broader than long. Two pairs of eyes with the anterior pair larger and wider apart. Three antennae all arising from the anterior margin of the prostomium; the median is much shorter than the laterals which are slightly longer than the palps. Palps with a stout basal joint and a slightly shorter distal one. Proboscis muscular and eversible, without jaws but with about ten large marginal papillae. Eight pairs of long, faintly articulated tentacular cirri on four short, incompletely fused segments. Over 25 setigers of which the first five to seven are uniramous and the rest biramous. First dorsal cirrus equal to 3/4 body width, subsequent dorsal cirri reaching the tips of the neurosetae, smooth or faintly jointed and mounted on short cirrophores. The first few feet are uniramous with only an internal acicula in the dorsal cirrophore but from about the sixth foot onwards, a notopodial papilla appears on the ventral side

of the cirrophore and bears about ten setae (fig. 11.2.l). Neuropodium long with a triangular presetal lobe, a shorter, rounded postsetal lip, a tapered ventral cirrus and numerous setae. Notosetae include capillaries with smooth flattened blades and forked setae (fig. 11.2.m). Neurosetae compound and falcigerous (fig. 11.2.o) with blades varying greatly in length but all have bidentate tips; the apical tooth is curved and almost meets the tip of the long slender secondary tooth.

TYPE LOCALITY: Agulhas Bank, South Africa.

RECORDS: Cape (33/17/d, 34/23/s, 34/26/d) – several specimens.

DISTRIBUTION: Endemic.

Gyptis sp. (A doubtful species)

Oxydromus sp. Augener, 1918: 225.

Number of segments unknown. Prostomium with four eyes but antennae and palps unknown. Proboscis without a median tooth but possibly has lateral jaws. Margin of proboscis papillose. Eight pairs of tentacular cirri. Parapodia biramous, the notopodia having one to two acicula, a few fine capillaries and one to two short bifurcate setae. Neurosetae compound and falcigerous with blades of varying length.

LOCALITY: Dredged off Angola.

Family **SYLLIDAE** Grube, 1850

Small thread-like worms typically with elongated and jointed dorsal cirri. Prostomium rounded with one to three antennae, four to six eyes and a pair of stout unjointed palps. The anterior part of the alimentary canal consists of a sheath with a papillose margin enclosing a chitin-lined pharynx often armed with teeth and behind this a muscular proventriculus which is transversely striated and papillose internally. Peristomial segment achaetous with one to two pairs of tentacular cirri which lack internal acicula. Parapodia uniramous with slender, often jointed dorsal cirri, a setigerous lobe with a fan of compound falcigerous setae, and usually a ventral cirrus. At maturity a sexual bud or buds may develop posteriorly or the whole body may develop gonads and natatory setae are formed below the dorsal cirrus so that the foot is biramous.

Records from southern Africa

Alluandella madagascariensis Gravier	Madagascar (i), 14Mi
Amblyosyllis formosa (Claparède)	
as *Amblyosyllis lineolata* (Costa)	41Ci, 50Cs
as *Cirrosyllis picta* Schmarda	4Ci
Anguillosyllis capensis Day	56Cd
Autolytus bondei Day	36Ci
Autolytus charcoti Gravier	50Cs
? as *Autolytus afer* Ehlers	16Wi
Autolytus maclearnus McIntosh	50Cs
as *Autolytus inermis* (non Saint Joseph)	21Ci
Autolytus pictus (Ehlers)	26Ai, ?36Cp, 41Ci, 45Pi
Autolytus prolifer (Müller)	13Ci, 45Ni, 50Cs
Autolytus tuberculatus (Schmarda)	41Ci, 50Cs
as *Cirrosyllis tuberculatus* Schmarda	4Ci
Brania furcelligera (Augener)	
as *Grubea furcelligera* Augener	50Cs
Brania pusilla (Dujardin)	
as *Grubea pusilla* (Dujardin)	26Ws (partim)
Brania rhopalophora (Ehlers)	
as *Grubea rhopalophora* Ehlers	26Ws (partim), 50Cs
Eusyllis assimilis Marenzeller	56Cs
as *Eusyllis monilicornis* (non Malmgren)	31As
Exogone clavator Ehlers	21Ci, 41Ci, 45Ni, 50Cs
as *Exogone heterochaeta* (non McIntosh)	26Wis
Exogone gemmifera Pagenstecher	50Cs
Exogone heterosetosa McIntosh	?27Mi
Exogone normalis Day	56Csd
Exogone verugera (Claparède)	41Ci, 50Cs

Exogonoides antennata Day 53Cs
Irmula spissipes Ehlers 21Cp
Lamellisyllis comans Day 50Cs
Myrianida phyllocera Augener . . . 26Ws, 41Ci
Myrianida pulchella Day 41Ci, 45Pi
Odontosyllis ctenostoma Claparède . . . 26Ai
Odontosyllis gibba Claparède . . . 45Pi
Odontosyllis polycera (Schmarda) . . . 26Ws, 41Ci, 50Cs
as *Odontosyllis ctenostoma* (non Claparède) . 50Cs
Opisthosyllis ankylochaeta Fauvel . . . 28Mi
Opisthosyllis brunnea Langerhans . . . 40Ni, 41Ci
Opisthosyllis laevis Day 45Pi
Pharyngeovalvata natalensis Day . . . 40Ni, 50Cs
Pionosyllis ehlersiaeformis Augener . . . 26Wi, 41Ci, 50Cs
Pionosyllis magnidens Day 41Ci, 50Cs
Pionosyllis longocirrata Saint Joseph . . 50Cs
as *Pionosyllis* sp. 41Ci
Pionosyllis malmgreni McIntosh . . . 23Ci
as *Pionosyllis ehlersiaeformis* (non Augener) . 41Ci
Procerastea perrieri Gravier 50Cs
Spermosyllis capensis Day 41Ci
Sphaerosyllis erinaceus Claparède . . .
as *Sphaerosyllis perspicax* Ehlers . . . 26Wis
Sphaerosyllis capensis Day . . . .
as *Sphaerosyllis hystrix capensis* Day . . 41Ci, 50Cs
Sphaerosyllis semiverrucosa Ehlers . . . 21Ci
Sphaerosyllis sublaevis Ehlers 21Ci, 41Ci, 50Cs
Syllides longocirrata Oersted 50Cs
Syllis (*Syllis*) *amica* Quatrefages . . . 40Ni
Syllis (*Typosyllis*) *armillaris* (Muller) . . 32Cs, 41CiWi, 50Cs
as *Syllis brachychaeta* Schmarda . . . 26Wis, 33Ci, 35Ci
40Ni, 44Ci
as *Syllis closterobranchia* Schmarda . . 4Ci, 16Wi
as *Syllis crassicornis* Schmarda . . . 4Ci
as *Syllis* cf. *krohni* 45Pi
as *Syllis lineata* Schmarda . . . 4Ci
as *Syllis gracilis* (non Grube) . . . 36Ci
as *Trichosyllis sylliformis* Schmarda . . 4Ci
Syllis (*Typosyllis*) *benguellana* Day . . . 56Cs
Syllis (*Typosyllis*) *bouvieri* Gravier . . . 27Mi, 53Mi
Syllis (*Typosyllis*) *cirropunctata* Michel . . 45Pi
Syllis (*Langerhansia*) *anops* Ehlers . . . 50Cs
Syllis (*Langerhansia*) *cornuta* Rathke . .
as *Syllis* (*Ehlersia*) *cornuta* Rathke . . 13Ci, 27Mi, 40Ni
Syllis (*Langerhansia*) *ferrugina* Langerhans . 50Cs

as *Syllis* (*Ehlersia*) *ferrugina* Langerhans	26Ai
as *Syllis gracilis* (non Grube)	4Ci
as *Syllis* (*Ehlersia*) *sexoculata* Ehlers	21Ci, 26Ais
Syllis (*Typosyllis*) *exilis* Gravier	27Mi, 45Ni
as *Syllis vittata* (non Grube)	40Ni
Syllis fusicornis Schmarda	4Ci
Syllis (*Syllis*) *gracilis* Grube	26Ai, 27Mi, 41Ci, 45NiPi, 50Cs
Syllis (*Typosyllis*) *hyalina* Grube	26Ais
as *Syllis capensis* McIntosh	10Cs
Syllis (*Syllis*) *longissima* Gravier	27Mi
as *Syllis* sp.	41Ci
Syllis monilaris Savigny	1Pi
Syllis (*Typosyllis*) *nigropharyngea* Day	40Ni
Syllis (*Typosyllis*) *prolifera* Krohn	21Ci, 40Ni, 45NiPi
as *Syllis zonata*: Haswell (non Grube)	26Wi, 41Ci, 50Cs
Syllis (*Haplosyllis*) *spongicola* Grube	29Mi, 31Ai, 40Ni, 45Pi, 50Csd
as *Syllis djiboutiensis* Gravier	27Mi
as *Eusyllis setabulensis* McIntosh	39Ci
Syllis (*Haplosyllis*) *trifalcata* Day	50Cs
Syllis (*Typosyllis*) cf. *taprobanensis* Willey	50Cs
Syllis (*Typosyllis*) *variegata* Grube	21Ci, 27Mi, 28Mi, 35Ci, 36Ci, 41Ci, 50Cs
Syllis (*Typosyllis*) *vittata* Grube	36Ci (pp.), 41Ci, 50Cs
Trypanosyllis ankyloseta Day	50Cs
Trypanosyllis gemmulifera Augener	26Wis, 41Ci, 50Cs
as *Trypanosyllis ingens* (Johnston)	32Cs
as *Trypanosyllis gemmipara* Johnson	
Trypanosyllis misakiensis Izuka	40Ni
Trypanosyllis prampramensis Augener	41Ci
Trypanosyllis zebra (Grube)	35Ci, 40Ni, 41Ci, 50Cs

BIOLOGICAL NOTES

The syllids are a large and diverse group of small active worms most of which are found creeping over sponges, ascidians, hydroids, bryozoa and algae. This is not always the case, however, and the most minute forms, such as *Exogone*, burrow in the surface layers of silt and are common on protected sandbanks. Since no solid food has been found in the gut, it is assumed that syllids are not detritus feeders. On the other hand they all possess an eversible pharynx usually armed with one or more teeth and behind this is the proventriculus. This is a muscular barrel-shaped structure often called a gizzard but there is no solid food in the gut so it can hardly be a grinding organ. It is suggested that it acts as a pump and that in a typical genus such as *Syllis*, the dorsal styliform tooth pierces the skin of some sedentary organism and the proventriculus pumps out the juice. Some syllids live on sponges, others on hydroids or compound ascidians and yet others on algae. The pharyngeal teeth of

syllids are very variable and a study of the feeding habits of syllids should produce interesting results.

Syllids also have interesting reproductive habits. In some species of *Syllis* the body cavity merely becomes filled with eggs or sperm and the worms swarm in the plankton at night and discharge their gametes. *Odontosyllis* has similar habits but the males become phosphorescent. In *Pionosyllis*, *Exogone* and other genera, the eyes become enlarged and long notopodial swimming setae develop from the bases of the dorsal cirri before swarming takes place. In certain species of *Syllis* the sexual products are developed only in the posterior segments. Further development along the same lines results in the differentiation of two generations – an asexual benthonic stock formed from the anterior segments, which produces a sexual planktonic stolon which breaks off and discharges its sexual products in the plankton. The stolon may develop a rudimentary head with eyes and sensory appendages. In *Trypanosyllis* a number of stolon "buds" are formed at the base of the last setigerous segment and as each one matures it breaks off and swims away. *Myrianida* produces a long chain of buds which trail behind the stock and break off in turn. The sexual buds of *Myrianida* and of the whole subfamily Autolytinae are sexually dimorphic and are known as the *Polybostrichus* (male) and *Saccocirrus* (female) stages. Once the eggs have been extruded and fertilised in the plankton, the *Saccocirrus* retains them in a delicate bag which she carries until they hatch.

Many other syllids care for their developing young. In the Exogoninae the developing eggs are segmentally arranged on the back of the female and carried about. *Pionosyllis* of the subfamily Eusyllinae, deposits her eggs in a tubular cocoon attached to a hydroid stem and remains in the cocoon until the young leave at the 10-setiger stage.

THE MAIN DIAGNOSTIC CHARACTERS

Useful discussions of family characters will be found in Malaquin (1893), Gravier (1900) and Fauvel (1923).* The most useful characters vary according to the subfamily.

Subfamily SYLLINAE. Syllidae with distinct ventral cirri, separate palps, a straight pharynx usually armed with teeth, two pairs of tentacular cirri and long jointed dorsal cirri. Reproduction is by the formation of one or more posterior sexual stolons or buds.

The most important characters are the armature of the pharynx which must be dissected or examined by transparency after immersion in glycerine, the number of joints on the dorsal cirri and the nature of the setae. Unfortunately the last two characters are both variable and specific identification is often uncertain so that there are a large number of doubtful names in the literature. The anterior cirri are always longer than those in the middle of the body and it is to the latter that the descriptions refer. The length of the setal blade decreases not only from anterior to middle segments but also from superior to inferior setae and the size of the secondary tooth on the blade varies in the same way. Again the blade of the seta may fall off giving the impression that the worm has simple setae. For these reasons

* Since going to press, an important review of the Syllidae of Japan has been published by Minoru Imajima 1966 *Publ, Seto Mar. Biol. Lab.* **13** (5) and **14** (1, 2 and 3).

only major differences are important. The colour pattern is helpful in fresh specimens and seems to be very constant in some species.

Subfamily EUSYLLINAE. Syllidae with distinct ventral cirri, palps which are fused across the dorsal part of their bases and often bent ventrally, a straight or coiled pharynx usually with teeth and two pairs of tentacular cirri. The dorsal cirri are usually elongated and smooth but may be vaguely annulated. Reproduction is direct.

The distinction between the *Syllinae* and the *Eusyllinae* is not as easy as the above definition would suggest for the palps may not be clearly united basally. The ventral surface of the head should be examined. The smooth dorsal cirri are more obvious guides though species with annulated dorsal cirri do occur. Generic distinctions are based on the armature of the pharynx and the species are well defined by differences in setae.

Subfamily EXOGONINAE. This subfamily includes many minute species, some only 2–3 mm. long. The ventral cirri are usually distinct and the palps are united either wholly or for half their length to form a large lobe which is grooved ventrally and projects forward in front of the small prostomium. The pharynx is straight and bears a single dorsal tooth. The appendages are often small and papilliform; the number of antennae varies from one to three and the tentacular cirri from one to two pairs. Reproduction is usually direct and the developing eggs may be carried on the back of the female.

The subfamily is well defined and generic distinctions are based on the number of head appendages, the structure of the dorsal cirri, the presence of a dorsal cirrus on setiger 2, the nature of the setae which include both simple and compound forms and the presence of adhesive papillae on the dorsum provide good characters. In general, however, the worms are so small that it is necessary to clear in glycerine and mount the whole worm on a slide before identification is possible.

Subfamily AUTOLYTINAE. No ventral cirri. Palps bent ventrally and partly or completely fused. Three antennae and one to two pairs of tentacular cirri. Pharynx sinuous (often S-shaped) and the anterior margin typically armed with a circle of teeth or *trepan*. Nuchal epaulettes often prominent. Dorsal cirri never jointed and may be missing after the first setiger. Reproduction by the formation of sexual buds which may develop one behind the other to form a chain. The buds are sexually dimorphic, the male or *Polybostrichus* form having bifid palps and three antennae while the female or *Saccocirrus* form has no palps, three antennae and a ventral sac to contain the developing eggs.

There are only a few easily recognisable genera. At the specific level, the most reliable character is the detailed structure of the trepan, which must be dissected if it is to be seen clearly. The setae have minute blades and are all very similar with the secondary tooth usually larger than the apical one. The development of the nuchal epaulettes is a good character and in fresh specimens the colour pattern as well. The relative lengths of the dorsal cirri are often quoted but this character should be used with caution.

Key to Subfamilies and Genera

1 Ventral cirri distinct (fig. 12.1.c) 2
– Ventral cirri absent (fig. 12.12.h). (Dorsal cirri not jointed. Palps partly or completely fused.) (fig. 12.10.h) (***AUTOLYTINAE***) 16
2 Palps separate (fig. 12.1.m). Two pairs of tentacular cirri. Dorsal cirri jointed (***SYLLINAE***) 3
– Palps fused basally (fig. 12.7.a). Two pairs of tentacular cirri. Dorsal cirri usually smooth (***EUSYLLINAE***) 5
– Palps fused for at least half their length (fig. 12.10.b). One to two pairs of tentacular cirri. Dorsal cirri smooth, usually short (***EXOGONINAE***) 11
3 Pharynx lacks chitinous teeth but has a fleshy valve. (An occipital flap) (fig. 12.1.a, b) ***PHARYNGEOVALVATA*** (p. 239)
– Pharynx with one or more chitinous teeth 4
4 Only a single large anterior tooth (fig.12.1.m) . . . . . ***SYLLIS*** (p. 239)
– Only a single large posterior tooth. (An occipital flap present) (fig. 12.5.c) ***OPISTHOSYLLIS*** (p. 252)
– A single anterior tooth plus a trepan (fig. 12.6.g). (Body flattened, often ribbon-like) ***TRYPANOSYLLIS*** (p. 253)
5 Dorsal cirri lamellar (fig. 12.6.k) . . . . . ***LAMELLISYLLIS*** (p. 257)
– Dorsal cirri cylindrical 6
6 Pharynx coiled. (Large nuchal epaulettes (fig. 12.6.l). Body with few segments) ***AMBLYOSYLLIS*** (p. 257)
– Pharynx straight. 7
7 Pharynx unarmed. (Antennae and anterior dorsal cirri short and wrinkled.) Ventral cirri longer than the setigerous lobes 8
– Pharynx armed. Ventral cirri not longer than setigerous lobes 9
8 Enlarged knobbed acicula in anterior feet . . . . . ***STREPTOSYLLIS****
– No enlarged knobbed acicula . . . . . ***SYLLIDES*** (p. 259)
9 Pharynx with a ventral semicircle of teeth and lateral cutting plates (fig. 12.7.j). (A large occipital flap) . . . . . ***ODONTOSYLLIS*** (p. 260)
– Pharynx with a single anterior dorsal tooth and a smooth or denticulate margin . 10
10 Rim of pharynx smooth . . . . . ***PIONOSYLLIS*** (p. 261)
— Rim of parynx denticulate (fig. 12.8.n) . . . . . ***EUSYLLIS*** (p. 264)
11 One pair of tentacular cirri 12
— Two pairs of tentacular cirri 15
— Six pairs of tentacular cirri (fig. 12.9.a) . . . . . ***IRMULA*** (p. 266)
12 A single median antenna (fig. 12.9.s) . . . . . ***SPERMOSYLLIS*** (p. 270)
— Three antennae 13
13 Dorsal cirri much longer than the setigerous lobes (fig. 12.10.z) ***ANGUILLOSYLLIS*** (p. 271)
— Dorsal cirri not longer than the setigerous lobes 14
14 Dorsal cirri papilliform (fig. 12.10.b) . . . . . ***EXOGONE*** (p. 271)
— Dorsal cirri flask-shaped (fig. 12.11.l) . . . . . ***SPHAEROSYLLIS*** (p. 275)
15 Dorsum with rows of globular papillae . . . . . ***EURYSYLLIS****
— Dorsum without rows of papillae . . . . . ***BRANIA*** (p. 267)
16 One pair of tentacular cirri. (Antennae and cirri ovoid) (fig. 12.11.w) ***EXOGONOIDES*** (p. 279)
— Two pairs of tentacular cirri 17
17 Pharynx short, straight and unarmed. An occipital flap present ***ALLUANDELLA*** (p. 279)
— Pharynx long, S-shaped or coiled and armed with a trepan usually with teeth. No occipital flap 18
18 Dorsal cirri present on all setigers 19
— Dorsal cirri absent after the first setiger (fig. 12.12.a) . . ***PROCERASTEA*** (p. 280)
19 Dorsal cirri cylindrical or filiform . . . . . ***AUTOLYTUS*** (p. 281)
— Dorsal cirri foliaceous or at least somewhat flattened. (A long chain of buds) (fig. 12.13.l) ***MYRIANIDA*** (p. 285)

PHARYNGEOVALVATA Day, 1951

Palps not fused. Three antennae and two pairs of tentacular cirri. An occipital palp present. Antennae, tentacular cirri and dorsal cirri indistinctly jointed and ventral cirri ovoid. Pharynx without chitinous teeth but with a fleshy, dorsal ridge meeting two ventro-lateral ones.

Type species: *Pharyngeovalvata natalensis* Day, 1951.

Pharyngeovalvata natalensis Day, 1951
(fig. 12.1.a–d)

Pharyngeovalvata natalensis Day, 1951 : 26, fig. 4 e–j.

Body about 12 mm. long, soft and swollen dorsally. Prostomium (fig. 12.1.a) broader than long with a pair of large eyes (? two pairs fused). Palps bent ventrally. An occipital flap. Pharynx (fig. 12.1.b) with a valve formed by a longitudinal dorsal ridge meeting transverse ventro-lateral ridges at the level of setiger 5. No chitinous teeth. Proventriculus from setiger 10 to 18 with 70 rows of points. Antennae, tentacular cirri and dorsal cirri (fig. 12.1.c) long and indistinctly jointed. Setae (fig. 12.1.d) compound with expanded shaft-heads and short hooked blades which are either unidentate or have a minute secondary tooth.

Type locality: Tongaat, Natal.

Records: Cape (34/18/s); Natal (29/32/i) – two specimens known.

Distribution: Endemic.

SYLLIS Savigny, 1818

Palps not fused. Pharynx with a single anterior dorsal tooth. Three antennae and two pairs of tentacular cirri. Antennae, tentacular cirri and dorsal cirri elongate and jointed. Ventral cirri present. Reproduction by stolons.

Type species: *Syllis monilaris* Savigny, 1818.

Key to Species

1 Only a few enlarged simple setae corresponding to the shafts of compound setae (fig. 12.1.i). (Subgenus ***HAPLOSYLLIS***) 2
– Mainly compound setae anteriorly then a few large simple setae formed by the loss of the blades. (Subgenus ***SYLLIS***) 3
– Only compound setae present 5
2 Profile of seta shows two teeth, the terminal one bifid (fig. 12.1.i) ***S.* (*H.*) *spongicola*** (p. 240)
– Profile of seta shows three large teeth (fig. 12.1.l) . . . ***S.* (*H.*) *trifalcata*** (p. 241)
3 Compound setae strongly bidentate and simple setae with Y-shaped prongs. Dorsal cirri with 7–12 joints (fig. 12.1.n, o, p) . . . . ***S.* (*S.*) *gracilis*** (p. 241)
– Compound setae unidentate or minutely bidentate 4

4 Simple setae obliquely truncate (fig. 12.2.d). Body of normal size. Dorsal cirri with 15–25 joints . . . . . ***S.*** (***S.***) ***amica*** (p. 243)
– Simple setae with broadly Y-shaped prongs (fig. 12.2.i). Body very long. Dorsal cirri with few joints . . . . . ***S.*** (***S.***) ***longissima*** (p. 243)
5 Blades of a few superior setae much longer than the rest (fig. 12.2.m). (Subgenus ***LANGERHANSIA***) 6
– Blades of setae decrease evenly in length. (Subgenus ***TYPOSYLLIS***) 8
6 Normal setae unidentate. Eyes absent. (Aciculum very stout) . ***S.*** (***L.***) ***anops*** (p. 243)
– Normal setae bidentate. Eyes present 7
7 Dorsal cirri slender, jointed anteriorly smooth posteriorly. (Secondary tooth becomes larger than terminal one) (fig. 12.2.r) . . . . . ***S.*** (***L.***) ***ferrugina*** (p. 244)
– Dorsal cirri short and jointed throughout . . . . . ***S.*** (***L.***) ***cornuta*** (p. 244)
8 Setae strongly bidentate 9
– Setae unidentate or minutely bidentate 14
9 Dorsal cirri with more than 20 joints 10
– Dorsal cirri short with 7–12 joints . . . . . ***S.*** (***T.***) ***hyalina*** (p. 246)
10 Setal blades very short, strongly bidentate 11
— Setal blades of normal length 12
11 Shaft-heads swollen, setal blades longer than broad (fig. 12.3.b) ***S.*** (***T.***) cf. ***taprobanensis*** (p. 246)
— Shaft-heads not obviously swollen, blades not longer than broad . ***S.*** sp. (Not identified)
12 Inferior setae with a long secondary tooth well separated from the terminal one (fig. 12.3.f). A small occipital flap . . . . . ***S.*** (***T.***) ***bouvieri*** (p. 246)
— All setae with a normal secondary tooth close to the terminal one. No occipital flap . 13
13 Pharynx short. Two continuous dark bars across the dorsum of each anterior segment (fig. 12.3.g) . . . . . ***S.*** (***T.***) ***prolifera*** (p. 248)
— Pharynx long. A pattern of broken brown bars across the dorsum of each anterior segment (fig. 12.3.l) . . . . . ***S.*** (***T.***) ***variegata*** (p. 248)
14 Pharynx with a black ring (fig. 12.2.o). (Dorsal cirri with about 20 joints) ***S.*** (***T.***) ***nigropharyngea*** (p. 249)
— Pharynx without a black ring 15
15 Alternately longer dorsal cirri have 15 joints or less 16
— Alternately longer dorsal cirri have more than 20 joints 17
16 Dorsal cirri fusiform with stout joints. Setae minutely bidentate anteriorly but often unidentate in middle of body (fig. 12.4.b–d) . . . ***S.*** (***T.***) ***armillaris*** (p. 249)
— Dorsal cirri slender with long joints. Setae four to six and all unidentate (fig. 12.4.f, g) ***S.*** (***T.***) ***benguelana*** (p. 249)
17 A small occipital flap (fig. 12.4.h). Superior setae minutely bidentate, inferior ones unidentate . . . . . ***S.*** (***T.***) ***exilis*** (p. 250)
— No occipital flap. Setae all unidentate 18
18 Dorsal cirri speckled (fig. 12.4.k). Setae short and strongly hooked. Dorsum with rows of spots . . . . . ***S.*** (***T.***) ***cirropunctata*** (p. 250)
— Dorsal cirri all pale. Setae of normal length. Dorsum often barred (fig. 12.4.m) ***S.*** (***T.***) ***vittata*** (p. 252)

Syllis (***Haplosyllis***) ***spongicola*** Grube, 1855
(fig. 12.1.e–i)

Syllis spongicola Grube, 1855: 104; Fauvel, 1923: 257, fig. 95 a–d.

Body (fig. 12.1.f) about 25 mm. long, white and arched dorsally. Prostomium (fig. 12.1.e) with four eyes and two ocular specks. Antennae slender. Pharynx long with an anterior dorsal tooth. Proventriculus long. Dorsal cirri (fig. 12.1.g)

long and tapered with 20–30 joints. No compound setae, there being two to three stout, boathook-shaped setae with the terminal point bifid (fig. 12.1.i). Three acicula with bent tips (fig. 12.1.h).

TYPE LOCALITY: Trieste (Adriatic Sea).

RECORDS: Cape (from 31/16/d, and 34/18/s to 33/25/s); Natal (29/31/i) and Mocambique (26/32/i) – fairly common.

DISTRIBUTION: Cosmopolitan in temperate and tropical seas (i, s, d).

Syllis* (*Haplosyllis*) *trifalcata Day, 1960
(fig. 12.1.j–l)

Syllis (*Haplosyllis*) *trifalcata* Day, 1960: 308, fig. 6 g–i.

Body 9 mm. long with 88 segments; colour pale in alcohol. Palps (fig. 12.1.j) broad but not united. Antennae short and subequal. Four eyes. Pharynx fairly long; proventriculus with 40 rows of points. Dorsal cirri (fig. 12.1.k) very short, tapered, often coiled and have 9–12 joints. Ventral cirri small. Parapodia each with three to six simple setae with the expanded shaft-head terminating in three subequal claw-like teeth (fig. 12.1.l).

TYPE LOCALITY: False Bay, South Africa.

RECORDS: Cape (34/18/s) – a single specimen.

Syllis* (*Syllis*) *gracilis Grube, 1840
(fig. 12.1.m–p)

Syllis gracilis Grube, 1840: 77; Fauvel, 1923: 259, fig. 96 f–i.

Body slender and about 35 mm. long. Four eyes. Antennae (fig. 12.1.m) stout and have 8–12 joints. Pharynx long with an anterior tooth. Proventriculus from setiger 10 to 14. Dorsal cirri stout, anterior ones cylindrical with about 16 joints, middle ones shorter, somewhat fusiform with 8–12 joints (fig. 12.1.n). Anterior setae (fig. 12.1.o) compound and bidentate but by the middle of the body the compound setae are mainly or entirely replaced by two to three stout Y-shaped simple setae (fig. 12.1.p) formed by the loss of the blade of a compound seta. Compound setae reappear in posterior segments. Two dark cross-bars across anterior segments.

TYPE LOCALITY: Mediterranean Sea.

RECORDS: South West Africa (22/14/i) around the Cape (i, s) to Natal (29/32/i) and Mocambique (26/32/i and 23/35/s) – fairly common.

DISTRIBUTION: Cosmopolitan in temperate and tropical seas (i, s).

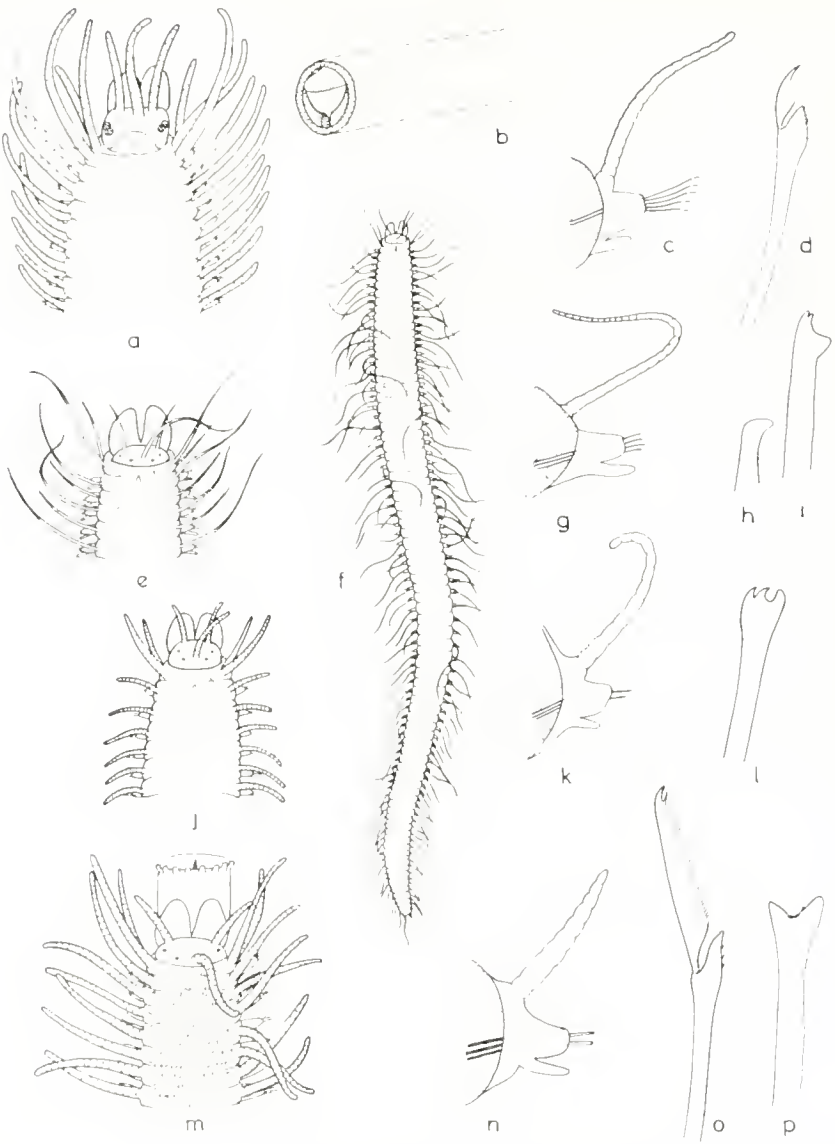

FIG. 12.1. *Pharyngeovalvata natalensis*. (A) Head. (B) Pharynx showing valve. (C) Foot. (D) Seta. *Syllis spongicola*. (E) Head. (F) Entire worm (four times life size). (G) Middle foot. (H) Tip of aciculum. (I) Simple seta. *Syllis trifalcata*. (J) Head. (K) Foot. (L) Seta. *Syllis gracilis*. (M) Head. (N) Middle foot. (O) Anterior seta. (P) Simple seta.

Syllis (*Syllis*) *amica* Quatrefages, 1865
(fig. 12.2.a–e)

Syllis amica Quatrefages, 1865: 20, pl. 5 figs. 16–22; Fauvel, 1923: 258, fig. 95 e–m.

Length 20–60 mm. Prostomium with four eyes. Pharynx long with an anterior tooth. Proventriculus extends over five segments. Dorsal cirri (fig. 12.2.a) rather stout but tapered, having 15–25 joints and roughly equal to the width of the body. Setae short and of two kinds; many compound setae having short unidentate blades (fig. 12.2.c) or minutely bidentate blades (fig. 12.2.b) plus one to three stouter simple setae (fig. 12.2.d) formed by loss of the blade, the shaft-head being obliquely truncate. (cf. *S. armillaris*.) Tip of aciculum (fig. 12.2.c) with a small knob.

Type locality: France.

Records: Natal (30/30/i, 29/32/i) – few records.

Distribution: Ireland, English Channel, Madeira, Mediterranean (i, s).

Syllis (*Syllis*) *longissima* Gravier, 1900
(fig. 12.2.f–i)

Syllis longissima Gravier, 1900: 154, pl. 9 fig. 7, text-figs. 17–23.

A very long species reaching 130 mm. with two dark cross-bars across anterior segments. Prostomium broader than long with four eyes, the anterior pair being the larger. Antennae with 25 joints. Palps short and broad. Pharynx long, reaching setiger 21; proventriculus extending on to setiger 33. Dorsal cirri decrease markedly in length and change in shape being cylindrical with over 30 joints anteriorly but short and fusiform with only ten joints in the middle of the body (fig. 12.2.f). Anterior setae (fig. 12.2.g) with normal unidentate blades, later setae with very short triangular blades (fig. 12.2.h) and in the middle of the body, only two enlarged simple setae with Y-shaped tips (fig. 12.2.i). In posterior feet there are two inferior compound setae as well. Possibly this species is a giant form of *S. gracilis*.

Type locality: Red Sea.

Records: Madagascar (i).

Distribution: Red Sea (i, s); Persian Gulf; Australia; Peru; Chile; Juan Fernandez.

Syllis (*Langerhansia*) *anops* Ehlers, 1897
(fig. 12.2.j–n)

Syllis (*Ehlersia*) *anops* Ehlers, 1897: 40, pl. 2 figs. 40–45.
Syllis (*Langerhansia*) *anops*: Day, 1960: 310.

Body slender, measuring 15–25 mm. for 120 segments. Prostomium (fig. 12.2.j) broader than long and lacks eyes. Antennae rather short, subequal and with 25–30 joints. Palps fused basally. Pharynx with an anterior tooth. Proventriculus extending over 11 segments. Dorsal cirri (fig. 12.2.n) equal to the width of the body and

have about 30 joints. Anterior setae with blades differing in length and the tips minutely bidentate. Middle feet have superior *Langerhansia*-type setae (fig. 12.2.m) with very long slender blades and inferior setae (fig. 12.2.l) with normal unidentate blades. Aciculum (fig. 12.2.k) very stout with a blunt tip. Ventral cirri short and arise near the ends of the setigerous lobes.

TYPE LOCALITY: Punta Arenas, Magellan Straits.

RECORDS: Cape (34 18 s, 33 25 s) – a few specimens only.

DISTRIBUTION: Magellan area. Chatham Is. (d).

Syllis (*Langerhansia*) *ferrugina* Langerhans, 1881
(fig. 12.2.o–r)

Ehlersia ferrugina Langerhans, 1881: 104, pl. 4 fig. 10.
Syllis (*Ehlersia*) *ferruginea*: Augener, 1918: 271.
Syllis (*Ehlersia ferrugina*: Fauvel, 1923: 269, fig. 100 k–u.

Body thread-like, about 10 mm. long. Prostomium with four eyes and two ocular specks. Palps large. Pharynx long with an anterior tooth; proventriculus with 25 rows of points. Dorsal cirri long and slender with 15–25 joints which are distinct anteriorly but poorly marked posteriorly (fig. 12.2.o). Ventral cirri slightly longer than the setigerous lobes. Anterior setae with blades of variable length and with the terminal tooth stronger than the secondary one (fig. 12.2.p). Middle parapodia with one to two superior setae with greatly elongated *Langerhansia*-type blades (fig. 12.2.q) and the rest with short blades with the secondary tooth much stronger than the terminal one (fig. 12.2.r). Acicula stout with knobbed tips in middle parapodia.

TYPE LOCALITY: Canary Islands.

RECORDS: Cape (32 18 s, 33 17 s, 33 18 i, s, 34 18 s) – fairly common.

DISTRIBUTION: Atlantic from North Carolina and Ireland (i) to Angola (i).

Syllis (*Langerhansia*) *cornuta* Rathke, 1843
(fig. 12.2.s–u)

Syllis cornuta Rathke, 1843: 164.
Syllis (*Ehlersia*) *cornuta*: Fauvel, 1923: 267, fig. 100 g–i.

Body thread-like, 10–15 mm. long. Prostomium with four eyes and two ocular specks. Palps large. Pharynx long with an anterior tooth. Proventriculus with 30–35 rows of points. Dorsal cirri (fig. 12.2.s) short with 10–18 joints which are always clearly marked. One to three superior setae with very long blades (fig. 12.2.t) and about six with normal bidentate blades with a slender secondary tooth (fig. 12.2.u).

TYPE LOCALITY: Norway.

RECORDS: Cape (34 18 i, 34 23 d); Natal (29 31 i) and Mocambique (26 32 i) – fairly common.

DISTRIBUTION: Atlantic from Greenland (s, d, vd) to Georgia (U.S.A.) (i, s) and Scotland (s) to the Antarctic (d); tropical Indian Ocean (i, s, d).

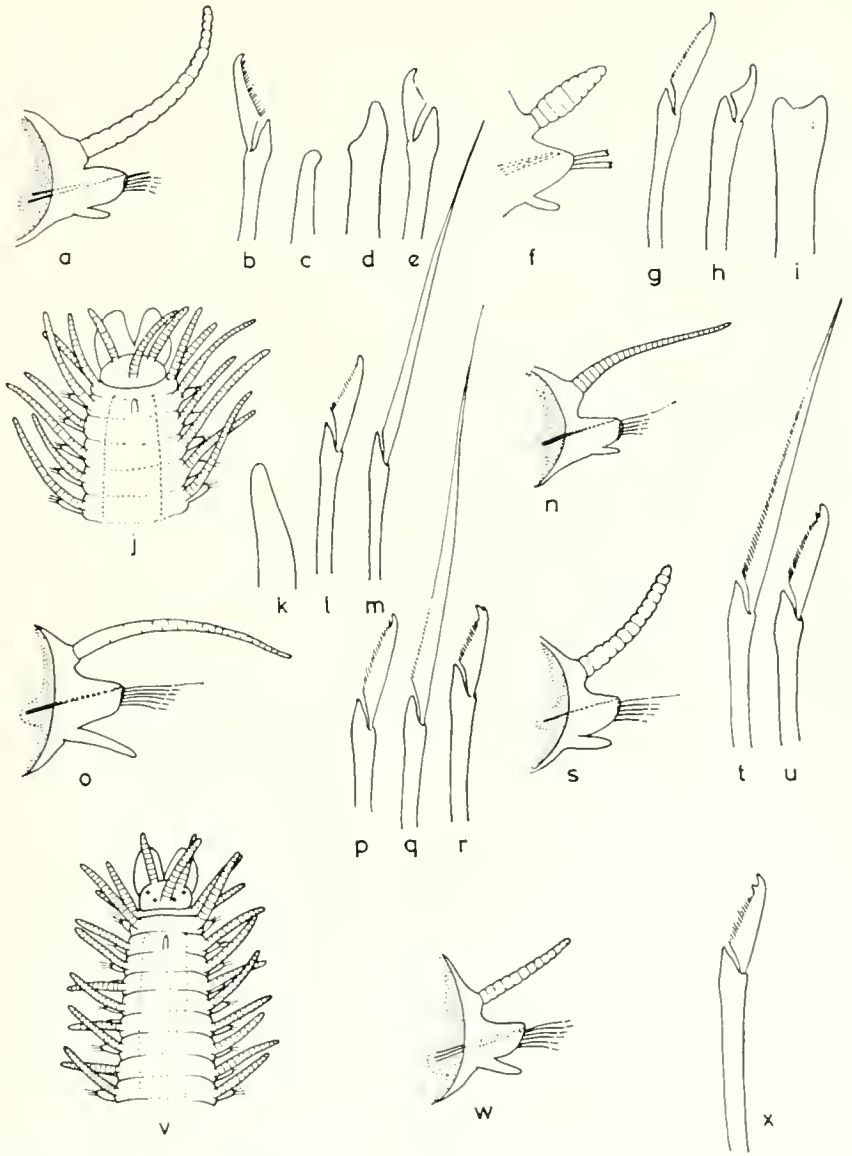

FIG. 12.2. *Syllis amica.* (A) Middle foot. (B) Seta from anterior foot. (C) Tip of aciculum. (D) Superior simple seta from middle foot. (E) Compound seta from middle foot. *Syllis longissima* (from Gravier). (F) Middle foot. (G) Seta from anterior foot. (H) Compound seta from later foot. (I) Giant simple seta from middle foot. *Syllis* (*Langerhansia*) *anops.* (J) Head. (K) Tip of aciculum. (L) Normal seta. (M) Elongate seta. (N) Foot. *Syllis* (*Langerhansia*) *ferrugina.* (O) Middle foot. (P) Anterior seta. (Q) Elongate seta from middle foot. (R) Normal seta from middle foot. *Syllis* (*Langerhansia*) *cornuta.* (S) Foot. (T) Elongate seta. (U) Normal seta. *Syllis hyalina.* (V) Head. (W) Foot. (X) Seta.

Syllis (*Typosyllis*) *hyalina* Grube, 1863
(fig. 12.2.v–x)

Syllis hyalina Grube, 1863: 45.
Syllis (*Typosyllis*) *hyalina*: Fauvel, 1923: 262, fig. 98 a–h.

Body slender up to 35 mm. long. Prostomium (fig. 12.2.v) with four eyes and sometimes two ocular specks as well. Antennae short with about 10–15 joints. Pharynx long with an anterior tooth. Proventriculus rather short. Dorsal cirri (fig. 12.2.w) short but not stout and have alternately six to seven and eight to twelve joints. Setae (fig. 12.2.x) with strongly bidentate blades. Possibly a young stage of *S. variegata*.

Type locality: Adriatic Sea.

Records: Cape (34°18′d, 34°22′s); Mocambique (24°35′d); Madagascar (s).

Distribution: Atlantic (English Channel (i, s)), tropical N. Africa (i); E. Pacific from Canada and California to Chile (i, s).

Syllis (*Typosyllis*) cf. *taprobanensis* (Willey, 1905)
(fig. 12.3.a–b)

Typosyllis taprobanensis Willey, 1905: 268.
Syllis cf. *taprobanensis*: Day, 1960: 309.

Body fairly stout, up to 15 mm. long with faint bars which fade in alcohol. Palps short and flattened but separate basally. Pharynx long with an anterior tooth; proventriculus slightly longer. Dorsal cirri about equal to the body width, obviously tapered and have 20–30 joints (fig. 12.3.a). About 10–12 setae per bundle, each with an expanded shaft-head and a very short triangular blade having two large blunt teeth (fig. 12.3.b).

Type locality: Ceylon.

Records: ? Cape (34°21′s, 34°25′s).

Distribution: *S. taprobanensis* is known only from Ceylon.

Syllis (*Typosyllis*) *bouvieri* Gravier, 1900
(fig. 12.3.c–f)

Syllis (*Typosyllis*) *bouvieri* Gravier, 1900: 163, pl. 9 fig. 10, text-figs. 31–34.
Syllis bouvieri: Day, 1962: 637.

Body about 10 mm. long and pale in alcohol. Prostomium (fig. 12.3.e) broader than long with four eyes. Median antenna inserted between the eyes and has 30 joints, laterals more anterior with 20 joints. A small occipital flap. Pharynx with an anterior tooth and extends to setiger 9; proventriculus extending on to setiger 15 with 35 rows of points. Dorsal cirri (fig. 12.3.d) tapered with 25–30 joints. Setae with strongly bidentate blades of varying length; the superior ones of anterior feet

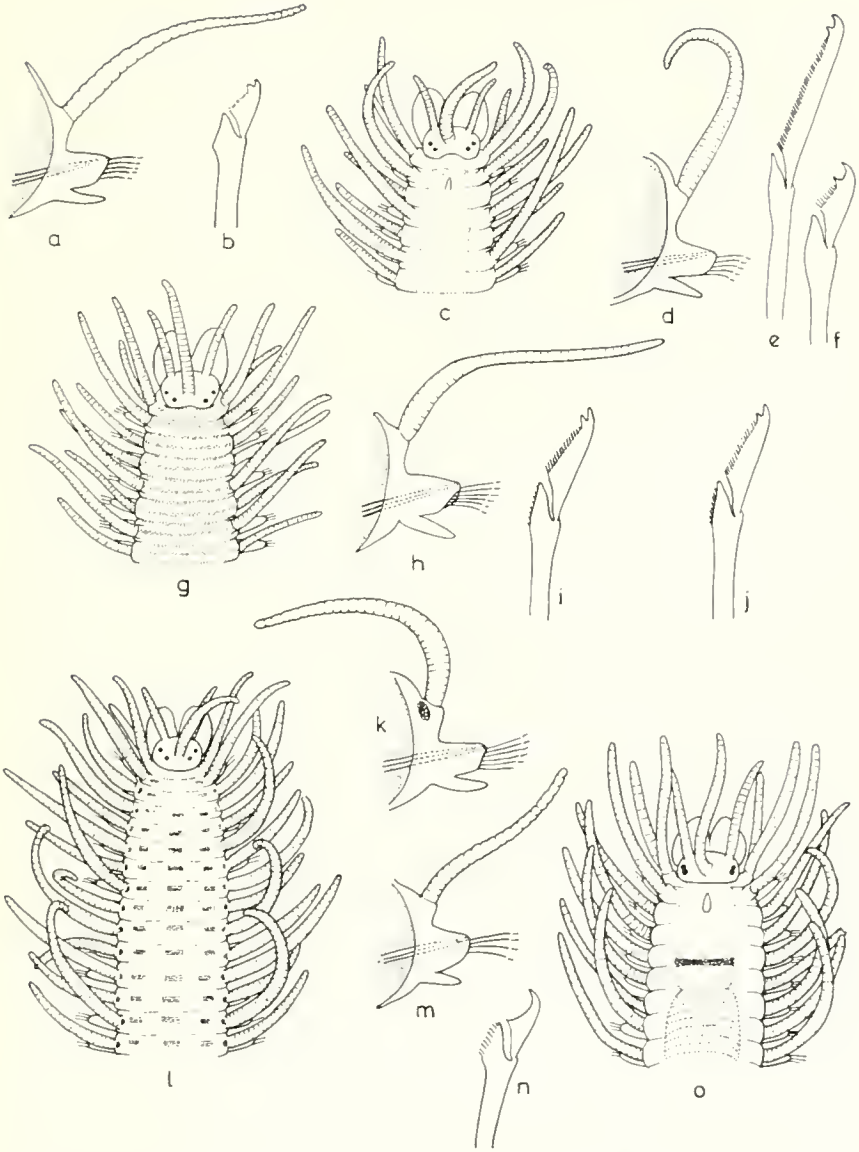

FIG. 12.3. *Syllis* cf. *taprobanensis*. (A) Foot. (B) Seta. *Syllis bouvieri*. (C) Head. (D) Foot. (E) Superior seta of anterior foot. (F) Inferior seta. *Syllis prolifera*. (G) Head. (H) Foot. (I) Seta. *Syllis variegata*. (J) Seta. (K) Foot. (L) Anterior end. *Syllis nigropharyngea*. (M) Foot. (N) Seta. (O) Head.

(fig. 12.3.e) have long blades with the two teeth projecting at right angles to the blades while the inferior ones (fig. 12.3.f) have short blades with sidely separated teeth. Middle feet have short blades with two strong, well separated teeth.

Type locality: Red Sea (Djibouti).

Records: Madagascar (i).

Distribution: Gulf of Aden.

Syllis (*Typosyllis*) *prolifera* Krohn, 1852
(fig. 12.3.g–i)

Syllis prolifera Krohn, 1852: 66.
Syllis (*Typosyllis*) *zonata* Augener, 1913: 195, pl. 3 fig. 22, text-fig. 21.
Syllis (*Typosyllis*) *prolifera*: Fauel, 1923: 261, fig. 97 a–g.

Body 10–20 mm. long with two dark lines across each of the anterior segments (fig. 12.3.g). Prostomium with four eyes and fairly long, separate palps. Median antenna with 27 joints, laterals with 16. Pharynx reaches setiger 9 and the proventriculus extends on to setiger 15 and has 25–30 rows of points.Dorsal cirri (fig. 12.3.h) alternately longer and shorter with 22 and 27 joints. About 10 compound setae with strongly bidentate blades of normal length (fig. 12.3.i).

Type locality: Mediterranean Sea.

Records: South West Africa (22/14/i) and the Cape (i, s) to Mocambique (26/32/i) – common on rocky shores.

Distribution: British Channel (i, s); Mediterranean; Indo-west-Pacific (i, s).

Syllis (*Typosyllis*) *variegata* Grube, 1860
(fig. 12.3.j–l)

Syllis variegata Grube, 1860: 85.
Syllis (*Typosyllis*) *variegata*: Fauvel, 1923: 262, fig. 97 h–n.

Body up to 40 mm. long, tough, usually with a pattern of broken brown bars on anterior segments (fig. 12.3.l). Prostomium with four eyes. Pharynx long, reaching setiger 12 and provided with an anterior dorsal tooth. It is followed by a long proventriculus extending over about 8–10 segments. Dorsal cirri (fig. 12.3.k) with 20–40 distinct joints and rather longer than the width of the body. Setae all compound with strongly bidentate blades of normal length (fig. 12.3.j).

Type locality: Adriatic.

Records: South West Africa (26/15/i); Cape (from 29/16/i and 34/18/i, s); Natal (29/31/i); Mocambique (26/32/i) – very common on rocky shores.

Distribution: Cosmopolitan in temperate and tropical seas (i, s).

Syllis (*Typosyllis*) *nigropharyngea* Day, 1951
(fig. 12.3.m–o)

Syllis nigropharyngea Day, 1951 : 23, fig. 4 a–d.

Length about 20 mm. No colour markings. Prostomium (fig. 12.3.o) with two to three pairs of eyes fused on each side. Palps short and broad. A short pharynx reaching setiger 6 with the dorsal tooth set fairly far back and a black ring preceding the proventriculus which extends over four segments and has 35 rows of points. Dorsal cirri (fig. 12.3.m) cylindrical with 15–20 joints. Setae (fig. 12.3.n) with short, hooked, unidentate blades and expanded shaft-heads with a comb-like row of denticles.

Type locality : Natal coast.

Records : Natal (29/31/i) – a single specimen.

Syllis (*Typosyllis*) *armillaris* (Müller, 1776)
(fig. 12.4.a–d)

Nereis armillaris Müller, 1771 in Müller, 1776 : 217.
Syllis (*Typosyllis*) *armillaris* : Fauvel, 1923 : 264, fig. 99 a–f.
Syllis (*Typosyllis*) *brachychaeta* Schmarda, 1861 : 70 ; Augener, 1918 : 247, pl. 4 figs. 83–85, pl. 5 fig. 98, text-fig. 20 (with synonymy).

Body (fig. 12.4.a) 25–35 mm. long, pale and tough. Prostomium with four eyes and two ocular specks. Palps large and projecting. Pharynx long with an anterior dorsal tooth. Proventriculus long with about 40 rows of points. Dorsal cirri (fig. 12.4.b) short, stout and fusiform with 8–12 joints. Setae (fig. 12.4.d) usually have short, often unidentate blades but a minute secondary tooth may be present in setae from anterior and posterior feet which have longer blades (fig. 12.4.c).

Type locality : Denmark.

Records : From South West Africa (22/14/i and 26/15/i, s) around the Cape (i, s) to Natal (29/31/i, s) and Mocambique (26/32/i and 24/34/s) – very common and widely distributed.

Distribution : Completely cosmopolitan from Arctic and tropics to Antarctic (i, s, d).

Syllis (*Typosyllis*) *benguellana* Day, 1963
(fig. 12.4.e–g)

Syllis benguellana Day, 1963a : 399, fig. 4 k–m.

A thread-like species with fine, delicate cirri. Size 9 mm. by 0·4 mm. for 90 segments. No colour markings. Prostomium (fig. 12.4.e) broader than long with three pairs of small eyes. Palps broad, not fused basally. Antennae slender, with 12–14 long joints. No occipital flap. Pharynx long, reaching setiger 9 and has a

s

small dorsal tooth. Proventriculus long with 35 rows of points. Body segments about four times as broad as long. Dorsal cirri (fig. 12.4.i) very slender with 12–14 long joints anteriorly and equal to two thirds the body breadth; posterior cirri shorter with only 8–12 joints. Ventral cirri rather long, exceeding the setigerous lobe. Two acicula per parapodium and about six compound setae (fig. 12.4.f) with straight unidentate blades of normal length. Posterior parapodia with a simple needle-like superior seta.

TYPE LOCALITY: In 27 metres off Lamberts Bay, South Africa.

RECORDS: Cape (32/18/s) – locally abundant.

Syllis* (*Typosyllis*) *exilis Gravier, 1900
(fig. 12.4.h–j)

Syllis (*Typosyllis*) *exilis* Gravier, 1900: 160, pl. 9 fig. 9, text-figs. 28–30.

Length about 8 mm. with 60 segments. Prostomium (fig. 12.4.h) with two pairs of eyes and a small occipital flap.* Pharynx reaching setiger 8 with the dorsal tooth well forward. Proventriculus from setiger 8 to 15 with about 33 rows of points. Dorsal cirri (fig. 12.4.i) long and rather slender with 30–40 joints. Ventral cirri slender. Setae (fig. 12.4.j) compound, the anterior ones with fairly long, minutely bidentate blades and the rest with short unidentate blades.

TYPE LOCALITY: Red Sea.

RECORDS: Natal (29/31/i); Madagascar (i).

DISTRIBUTION: Red Sea (i, s) and Indo-west-Pacific (i) to Japan.

Syllis* (*Typosyllis*) *cirropunctata Michel, 1909
(fig. 12.4.k–l)

Syllis cirropunctata Michel, 1909: 318.
Syllis (*Typosyllis*) *cirropunctata*: Fauvel, 1923: 266, fig. 99 n–p.

Body about 15 mm. long. Prostomium with four eyes. Pharynx extending to setiger 8 with an anterior dorsal tooth. Proventriculus long with 30–45 rows of points. Dorsal cirri (fig. 12.4.k) long and tapered with 30–40 joints, some of which are partly black so that the whole cirrus appears speckled. Setae (fig. 12.4.l) compound with short, markedly hooked, unidentate blades and an expanded shaft-head which is almost bidentate at the apex. Body colour greyish with a darker median stripe and often lateral spots.

TYPE LOCALITY: Naples.

RECORDS: Mocambique (26/32/i) – a single specimen.

DISTRIBUTION: Mediterranean.

*Gravier reported the postomium with a marked posterior identation. Natal specimens which certainly have a small occipital flap have a similar appearance under the microscope. It is suggested that Gravier was misled.

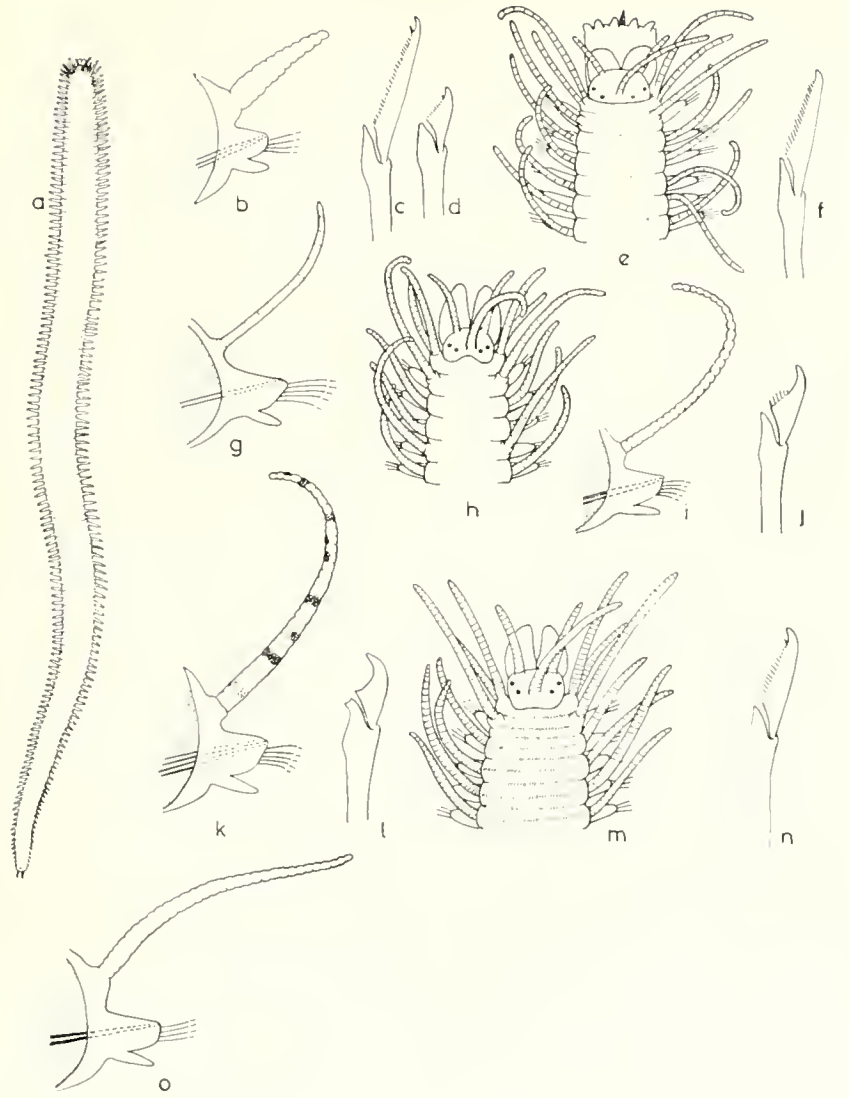

FIG. 12.4. *Syllis armillaris*. (A) Entire worm (five times life size). (B) Foot. (C) Seta from anterior foot. (D) Seta from middle foot. *Syllis benguellana*. (E) Head. (F) Seta. (G) Foot. *Syllis exilis*. (H) Head. (I) Foot. (J) Seta. *Syllis cirropunctata*. (K) Foot. (L) Seta. *Syllis vittata*. (M) Head. (N) Seta. (O) Foot.

Syllis (*Typosyllis*) *vittata* Grube, 1840
(fig. 12.4.m–o)

Syllis vittata Grube, 1840 : 77.
Syllis (*Typosyllis*) *vittata* : Fauvel, 1923 : 263, fig. 98 i–l.

Prostomium (fig. 12.4.m) quadrangular with four eyes. Pharynx extending back to setiger 9 with an anterior dorsal tooth ; proventriculus long with almost 30 rows of points. Palps large. Dorsal cirri (fig. 12.4.o) long and slender with 25–40 joints. Setae (fig. 12.4.n) compound with blades of normal length and either unidentate or with a minute secondary tooth. Body often with dark cross-bars at the intersegmental constrictions and across the middle of each segment.

Type locality : Mediterranean Sea.

Records : South West Africa (27/15/i) and the Cape (32/18/s, 34/18/s, 34/20/i, 24 32/s) – fairly common.

Distribution : N. Atlantic : Ireland (i, s), France and Morocco (i) ; Mediterranean.

OPISTHOSYLLIS Langerhans, 1879

Body elongate with numerous segments. Palps not fused at the base. Prostomium with three antennae, at least two pairs of eyes and usually an occipital flap. Pharynx with a single dorsal tooth set far back. Two pairs of tentacular cirri. Antennae, tentacles and dorsal cirri jointed. Ventral cirri conical.

Type species : *Opisthosyllis brunnea* Langerhans, 1879.

Key to Species

1	Middle feet with two large simple setae formed by fusion of the blade to the shaft (fig. 12.5.b)	***O. ankylochaeta***
–	Setae all compound apart from the few slender simple ones of posterior feet	2
2	Setae all unidentate. Pharyngeal tooth two-thirds the way back (fig. 12.5.c)	***O. brunnea***
–	Setae mainly bidentate. Pharyngeal tooth one-quarter the way back . . .	***O. laevis***

Opisthosyllis ankylochaeta Fauvel, 1921
(fig. 12.5.a–b)

Opisthosyllis ankylochaeta Fauvel, 1921 : 5, fig. 1 a–h.

Body smooth and colourless, about 15 mm. long. Prostomium with four large eyes and two long palps separated at the base. Occipital flap (?) absent. Pharynx with the dorsal tooth far back at the level of setiger 10. Proventriculus long, extending over six segments. Tentacular cirri with about 30 joints. Dorsal cirri alternately longer with 30 joints and equal to the body width or shorter with joints. Ventral cirri sausage-shaped. Anterior and posterior feet with compound, unidentate setae (fig. 12.5.a) ; middle feet with two simple setae (fig. 12.5.b) formed by fusion of the short, hooked blade to the shaft.

Type locality : Tamatave, Madagascar.

Records : Madagascar (i) – a single record from coral.

Distribution : New Caledonia.

Opisthosyllis brunnea Langerhans, 1879
(fig. 12.5.c–e)

Opisthosyllis brunnea Langerhans, 1879: 541; Augener, 1918: 274, text-fig. 25.

Body smooth, rather soft and broad, up to 10 mm. long for 75 segments. Palps tapered and twice the prostomial length. An occipital flap covering the posterior pair of eyes and part of the prostomium (fig. 12.5.c). Pharynx long and broad with a small dorsal tooth about two-thirds the way back at the level of setiger 8. Proventriculus extending over eight segments with 70 rows of points. Dorsal cirri (fig. 12.5.d) rather slender with about 20 joints. Setae compound with short unidentate blades (fig. 12.5.e).

Type locality: Madeira.

Records: False Bay (34/18/s) to Natal (30/30/i, s) and Mocambique (26/32/i) – occasional specimens on rocky shores and in shallow dredgings.

Distribution: Madeira (i), tropical W. Africa (i).

Opisthosyllis laevis Day, 1957*
(fig. 12.5.f–g)

Opisthosyllis laevis Day, 1957: 74, fig. 3 a–d.

Body smooth, not pigmented, up to 30 mm. long. Prostomium with stout palps and large reddish eyes. A small occipital flap. Pharynx short reaching setiger 6 with the large dorsal tooth only one quarter the way back. Dorsal cirri (fig. 12.5.f) equal to two-thirds the segmental width with 30 or more joints. Setae (fig. 12.5.g) compound and bidentate, the secondary tooth being well separated from the terminal one in middle segments.

Type locality: Mocambique; Madagascar (s).

Records: Mocambique (26/32/i) – a single record.

TRYPANOSYLLIS Claparède, 1864

Body flattened and ribbon-like with short segments. Head with three antennae, two pairs of tentacular cirri and separate palps. Pharynx with a circle of marginal teeth (trepan) and sometimes a single dorsal tooth as well. Antennae and cirri jointed. Ventral cirri present. Reproduction by stolons and a series of stolon buds may arise below the pygidium.

Type species: *Trypanosyllis krohni* Claparède, 1864 (= *Syllis zebra* Grube, 1860).

Key to Species

1 Dorsal cirri short with less than 12 joints 2
– Dorsal cirri with more than 20 joints 3

*Close to *Syllis exilis*.

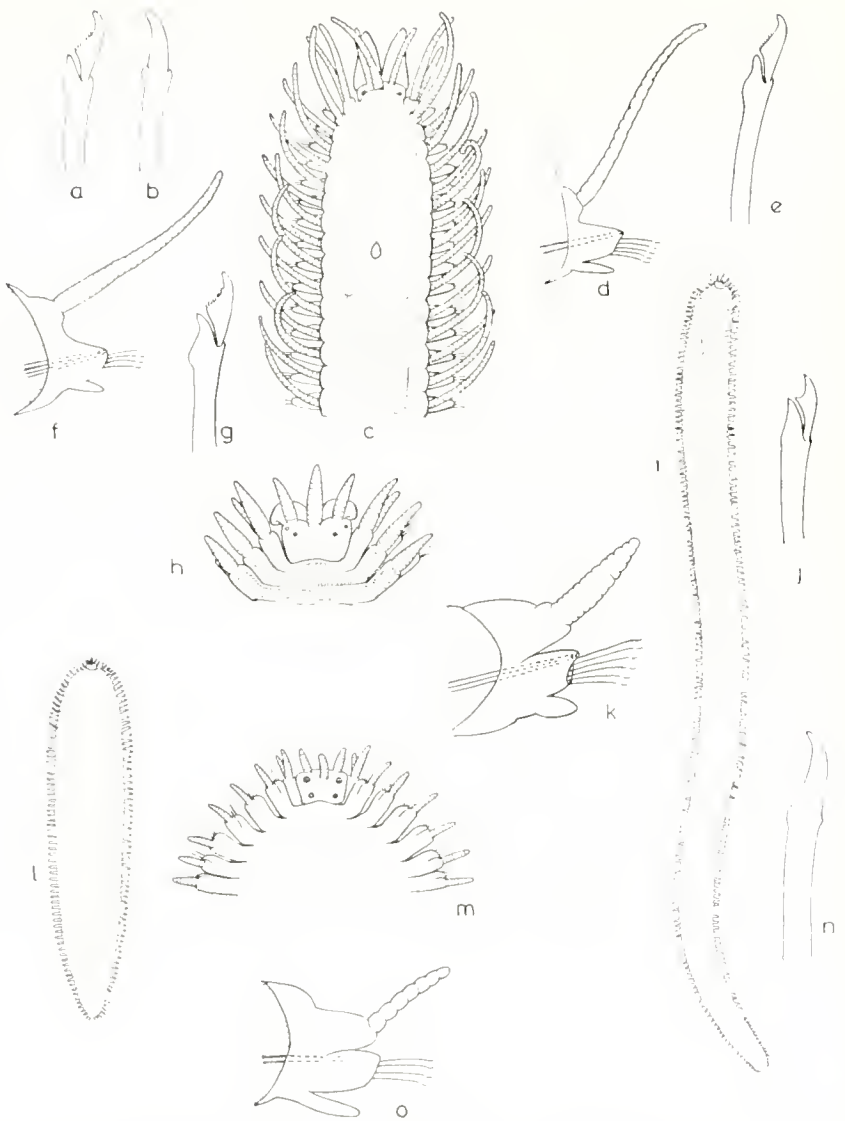

FIG. 12.5. *Opisthosyllis ankylochaeta* (from Fauvel, 1921). (A) Compound seta from anterior foot. (B) Simple seta from middle foot. *Opisthosyllis brunnea*. (C) Anterior end. (D) Foot. (E) Seta. *Opisthosyllis laevis*. (F) Foot. (G) Seta. *Trypanosyllis prampramensis*. (H) Head. (I) Entire worm (five times life size). (J) Seta. (K) Foot. *Trypanosyllis ankyloseta*. (L) Entire worm (six times life size). (M) Head. (N) Seta. (O) Foot.

2 Body normally elongate (fig. 12.5.i). Dorsal cirri with 8–12 joints. Setae compound ***T. prampramensis***
– Body very short (fig. 12.5.l). Dorsal cirri with six to eight joints. Setae simple with the blade fused to the shaft (fig. 12.5.n) . . . . . ***T. ankyloseta***
3 Tail with a cluster of stolon-buds (fig. 12.6.h) 4
– Tail without a cluster of stolon-buds. (Setae always bidentate, the secondary tooth being close to the terminal one) (fig. 12.6.a) . . . . . ***T. zebra***
4 Setae always bidentate . . . . . ***T. gemmipara***
– Setae unidentate in some feet at least (fig. 12.6.e) . . . . . ***T. gemmulifera***

Trypanosyllis prampramensis Augener, 1918
(fig. 12.5.h–k)

Trypanosyllis prampramensis Augener, 1918: 276, pl. 4 figs. 91, 92, text-fig. 86; Day, 1953: 414.

Body (fig.12.5.i) elongate and ribbon-like being 25 mm. long by 2 mm. broad. Two dark lines across anterior segments. Prostomium (fig. 12.5.h) broader than long, faintly bilobed, with four anterior eyes, short palps and short antennae with 10–12 joints. Tentacular cirri with 15–20 joints. Pharynx rather short with only 10 triangular teeth to the trepan. Proventriculus with 25–30 rows of points. Dorsal cirri (fig. 12.5.k) short and stout, often spindle-shaped with 8–12 joints and purplish in colour when fresh. About 10 compound setae with short, unidentate, hooked blades (fig. 12.5.j). Possibly a single sexual stolon.

Type locality: Prampram, Ghana.

Records: Cape (34/18/i, s, 34/21/i) – occasional specimens.

Distribution: Tropical western Africa.

Trypanosyllis ankyloseta Day, 1960
(fig. 12.5.l–o)

Trypanosyllis ankyloseta Day, 1960: 312, fig. 7 b–e.

A very short species (fig. 12.5.l) with a flattened, oval body about 8 mm. long, by 1·8 mm. for 120 segments. Prostomium (fig. 12.5.m) inserted between the anterior segments. Two ovoid palps and three short antennae with six to eight joints. Four eyes in a rectangle. Pharynx long and S-shaped with only ten teeth to the trepan. Proventriculus with 40–50 rows of points. Segments about 20 times as broad as long. Dorsal cirri (fig. 12.5.o) with six to eight joints. Setae (fig. 12.5.n) simple with the falcate blade fused to the shaft-head.

Type locality: Forty-two metres in False Bay, South Africa.

Records: Cape (34/18/s) – a single specimen.

Trypanosyllis zebra (Grube, 1860)
(fig. 12.6.a–b)

Syllis zebra Grube, 1860: 86.
Trypanosyllis zebra: Fauvel, 1923: 269, fig. 101 a–e; Fauvel, 1953: 157, fig. 79 a–d.

Body 30–60 mm. long, flattened and ribbon-like with two purple bars per segment and often purple dorsal cirri as well. Prostomium broader than long with four eyes. Pharynx with a trepan of ten triangular teeth and a dorsal tooth as well. Proventriculus long with 30 rows of points. Dorsal cirri (fig. 12.6.b) alternately longer and shorter with 20 or 50 short joints. Ventral cirri pointed. Setae (fig. 12.6.a) bidentate with the secondary tooth immediately behind the terminal one. The blade has no basal spur and its edge is spinulose. No cluster of buds, reproduction by a single stolon.

Type locality: Mediterranean coast of France.

Records: False Bay (34/18/i, s) to Natal (29/31/i) and Mocambique (23/35/e and 24/34/s); Madagascar (s) – fairly common.

Distribution: N. Atlantic (Plymouth (s) to Morocco (s, d) and North Carolina to the West Indies); Mediterranean; tropical Indian Ocean (i, s); Japan.

Trypanosyllis gemmipara Johnson 1901
(fig. 12.6.c)

Trypanosyllis gemmipara Johnson, 1901: 405, pl. 7 figs. 72-76.
Trypanosyllis misakiensis Izuka, 1906: 283; Izuka, 1912: 185, pl. 20 figs. 2–6; Fauvel, 1932: 79; Fauvel, 1953: 158.

Body flattened and about 20 mm. long. Pharynx with a trepan of only ten teeth. Proventriculus with 30 rows of points. Dorsal cirri alternately longer and shorter with 25 or 40 joints. Setae (fig. 12.6.c) compound with bidentate blades having the secondary tooth in the middle of the blade and a spur at its base. A vertical series of stolon-buds under the pygidium.

Type locality: Japan.

Records: Natal (30/30/i) to Mocambique (26/32/i) – occasional specimens on rocky shores.

Distribution: Indo-west-Pacific (i).

Trypanosyllis gemmulifera Augener, 1918*
(fig. 12.6.d–h)

Trypanosyllis gemmulifera Augener, 1918: 278, pl. 5 figs. 99–101, text-fig. 27; Day, 1953: 413.

Body flattened, 25–35 mm. long with two purple bars per segment. Prostomium (fig. 12.6.d) roughly square and notched posteriorly. Four eyes. Three antennae arising from the anterior margin of the prostomium. Pharynx with a trepan of only ten triangular teeth (fig. 12.6.g). Proventriculus long with 35 rows of points. Dorsal

*Possibly synonymous with *T. gemmipara*.

cirri (fig. 12.6.f) usually purple with 20–40 joints. In anterior feet the setae are usually bidentate with the secondary tooth near the centre of the blade which has a spur at its base (as in *T. misakiensis*). In posterior feet the secondary tooth may be smaller or absent altogether. In some specimens all setae are unidentate (fig. 12.6.e). A cluster of stolon-buds under the last segment (fig. 12.6.h).

Type locality: Swakopmund, South West Africa.

Records: South West Africa (22/14/i, 26/15/i, s and 28/16/s); Cape (33/18/i, s to 34/25/s) – fairly common.

Distribution: Endemic.

LAMELLISYLLIS Day, 1960

Body flattened with the prostomium sunk between the anterior segments. Prostomium with three lamellar antennae. Palps united at the base. Pharynx straight with an anterior dorsal tooth. Prominent nuchal epaulettes. A single pair of tentacular cirri. Dorsal cirri lamellar. Ventral cirri cylindrical and present on all segments. Setae compound.

Type species: *Lamellisyllis comans* Day, 1960.

Lamellisyllis comans Day, 1960
(fig. 12.6.i–l)

Lamellisyllis comans Day, 1960: 319, fig. 7 f–i.

A small, flattened worm, oval in outline and measuring 8 mm. with 50 segments. Prostomium (fig. 12.6.l) sunk between anterior segments and bearing four eyes and three subequal, foliaceous antennae. Palps normal and united only at their bases. Pharynx straight with an anterior dorsal tooth. Proventriculus oval and occupies five segments and has 20 rows of points. A pair of grooved nuchal organs extend back to setiger 3. A single pair of cylindrical tentacular cirri. Body segments (fig. 12.6.i) very broad and short each with a lamellar dorsal cirrus, a setigerous lobe and a digitiform ventral cirrus. Dorsal cirri (fig. 12.6.k) broader than long and attached at the margin. Setae (fig. 12.6.j) compound with bidentate blades and a group of very long spinules.

Type locality: False Bay, South Africa.

Records: Cape (34/18/s) – a single specimen.

AMBLYOSYLLIS Grube, 1857

Body short with a few well marked segments. Palps fused at the base. A pair of large nuchal epaulettes. Pharynx long and coiled with several teeth at the margin. Ventral cirri present. Dorsal cirri very long. Antennae, tentacular cirri and dorsal cirri indistinctly jointed.

Type species: *Amblyosyllis rhombeata* Grube, 1857.

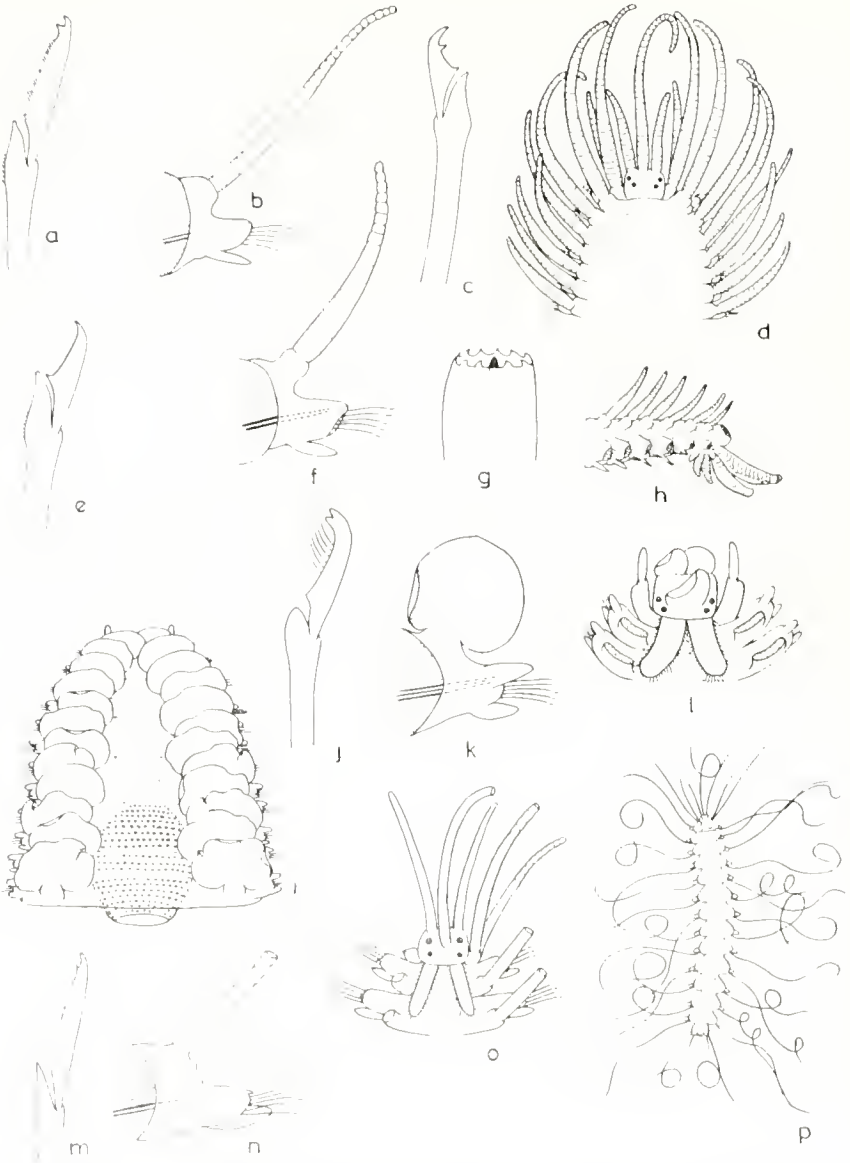

FIG. 12.6. *Trypanosyllis zebra*. (A) Seta. (B) Foot. *Trypanosyllis misakiensis*. (C) Seta. *Trypanosyllis gemmulifera*. (D) Head. (E) Unidentate seta. (F) Foot. (G) Trepan. (H) Cluster of stolon buds below last setiger. *Lamellisyllis comans*. (I) Anterior end. (J) Seta. (K) Foot. (L) Head. *Amblyosyllis lineolata*. (M) Seta. (N) Foot. (O) Head. (P) Entire worm (three times life size).

Amblyosyllis formosa Claparède, 1863
(fig. 12.6.m–p)

Pterosyllis formosa Claparède, 1863: 46, pl. 12 figs. 30–34; Fauvel, 1923: 280, fig. 105 h–n.

Body (fig. 12.6.p) short, only 10-15 mm. long with 13 setigers each of which is almost as long as broad. Prostomium (fig. 12.6.o) roughly square with four large eyes and the palps bent ventrally and fused at the base. Prominent nuchal epaulettes reaching setiger 2. Pharynx long and coiled and crowned with six to seven teeth. Proventriculus ovoid. Antennae, tentacular cirri and dorsal cirri very long, coiled and pseudo-articulate. Ventral cirri (fig. 12.6.n) pinniform, postero-ventral and longer than the setigerous lobes. Setae (fig. 12.6.m) with finely bidentate blades of varying length. A pattern of broken purple bars on the back of each segment.

Type locality: Normandy, France.

Records: Cape (32/18/i, 33/18/i, 34/18/i, s, 34/22/i); Madagascar (s) – occasional specimens on rocky shores.

Distribution: N. Atlantic (Plymouth (s) to Senegal (i)); Mediterranean; Japan.

SYLLIDES Oersted, 1845

Body minute with few segments. Palps fused at the base. Pharynx straight, unarmed. Antennae, tentacular cirri and anterior dorsal cirri short and wrinkled while later dorsal cirri are longer and obviously jointed. Ventral cirri digitiform. A superior simple, sabre-like seta, numerous compound setae and an inferior simple seta.

Type species: *Syllis* (*Syllides*) *longocirrata* Oersted, 1845.

Syllides longocirrata Oersted, 1845
(fig. 12.7.a–d)

Syllis (*Syllides*) *longocirrata* Oersted, 1845: 408.
Syllides longocirrata: Fauvel, 1923: 284, fig. 108 a–g.

Body about 5 mm. long with 37–46 segments and long parapodia and cirri. Prostomium (fig. 12.7.a) broader than long. Palps large, fused at the base and bent ventrally. Antennae, tentacular cirri and anterior dorsal cirri slightly swollen distally and wrinkled. Dorsal cirri of later segments (fig. 12.7.d) long with 10–15 clearly marked joints. Pharynx unarmed; proventriculus with 40–45 rows of points. Parapodia long; ventral cirri slender; compound setae (fig. 12.7.b) with long, minutely bidentate blades. A simple, superior sabre-like seta (fig. 12.7.c) with a minutely serrated blade in all feet.

Type locality: Norway.

Records: Cape (34/18/s) – rare.

Distribution: N.E. Atlantic (Sweden (d, vd), Plymouth (s)); Mediterranean; Chile (i); New Zealand (i)

ODONTOSYLLIS Claparède, 1863

Body elongate but soft and fragile, with cushion-like ventral cirri. Palps fused at the base. An occipital flap present. Pharynx armed with a semi-circle of recurved teeth. Antennae, tentacular cirri and dorsal cirri not jointed.

Type species: *Syllis fulgurans* Audouin & Milne Edwards, 1833.

Key to Species

1	Compound setae with unidentate blades	2
–	Compound setae with triangular bidentate blades, the secondary tooth being near the middle of the blade	3
2	Setal blades fairly long (fig. 12.7.f)	***O. gibba***
–	Setal blades very short and hooked (fig. 12.7.g)	***O. ctenostoma***
3	Body not pigmented	***O. polycera***
–	Body with a dark, mid-dorsal stripe	***O. gravelyi****

Odontosyllis polycera (Schmarda, 1861)
(fig. 12.7.i–m)

Syllis polycera Schmarda, 1861: 72.
Ondontosyllis polycera: Augener, 1918: 283, pl. 5 fig. 97; Day, 1953: 415.
Odontosyllis ctenostoma (non Claparède): Day, 1960: 313.

Body (fig. 12.7.k) soft, swollen dorsally, easily broken. Length up to 50 mm. by 2 mm. Prostomium with four large eyes in a rectangle. The median antenna arises between the eyes and behind the laterals. A large occipital flap covers most of the prostomium (fig. 12.7.i). Pharynx long and bent into a vertical S, the anterior half thin-walled and the posterior half thick-walled. The anterior half has a soft dorsal ridge and at the junction with the posterior part there is a minute dorsal tooth and a ventral semicircle of six to nine triangular teeth with cutting plates on either side (fig. 12.7.j). Proventriculus long, with 60–80 rows of points. Antennae and dorsal cirri tapered, smooth or faintly wrinkled, the anterior ones fairly long but in the middle of the body the dorsal cirri are less than half the width of the body (fig. 12.7.l). Feet with about 25 compound setae with short, triangular, bidentate blades, the secondary tooth being in the middle of the blade (fig. 12.7.m). Ventral cirri swollen, cushion-like and ventro-lateral to the setigerous lobe.

Type locality: Table Bay, South Africa.

Records: South West Africa (26,15 s) around the Cape (i, s) to (33 27 i); Moçambique (26 33 d); Madagascar (s) – fairly common.

Distribution: Chatham Is. (New Zealand) (i, s).

Odontosyllis gibba Claparède, 1863
(fig. 12.7.e–f)

Odontosyllis gibba Claparède, 1863: 47, pl. 12 fig. 7–8; Fauvel, 1923: 275, fig. 104 a–e; Day, 1957: 74.

Body stout, easily broken, up to 25 mm. long for 60 segments. Prostomium broader than long, with antero-lateral notches. Three short antennae, two pairs of eyes coalescent on either side. Palps large and bent ventrally. Pharynx with six recurved teeth ventrally and a pair of cutting plates laterally. Proventriculus short. A large occipital flap. Dorsal cirri (fig. 12.7.e) short and fusiform. Ventral cirri cushion-like and indistinct. Setae with long unidentate blades (fig. 12.7.f). Some specimens have alternate segments banded with black and there may be black patches on the occipital flap.

Type locality: France.

Records: Mocambique (26/32 i) – single specimen.

Distribution: English Channel (i, s); Atlantic coast of France; Mediterranean.

Odontosyllis ctenostoma Claparède, 1868
(fig. 12.7.g–h)

Odontosyllis ctenostoma Claparède, 1868: 202, pl. 12 fig. 4; Fauvel, 1923: 277, fig. 104 f–l. (Non Day, 1960: 313.)

Body stout, easily broken, up to 20 mm. long for 100 segments. Prostomium rounded, with four eyes and three rather short antennae. Palps joined at the base and bent ventrally. Pharynx with a posterior muscular bulb provided with six ventral recurved teeth and lateral cutting plates. Proventriculus long. A large occipital flap. Dorsal cirri (fig. 12.7.h) stout and wrinkled, ventral cirri rather flattened and shorter than the setigerous lobes. Setae (fig. 12.7.g) with swollen shaft-heads and short, unidentate, hooked blades. Colour yellowish with indistinct segmental bars.

Type locality: Mediterranean Sea.

Records: No Southern African records.

Distribution: N. Atlantic from English Channel (i, s) to Morocco (i); Mediterranean; Angola (i).

PIONOSYLLIS Malmgren, 1867

Body small. Palps fused at the base. Two pairs of tentacular cirri and three antennae. Pharynx chitinised but the rim is smooth and there is a large anterior dorsal tooth. Dorsal cirri usually smooth, sometimes weakly annulated. Ventral cirri present. Setae mainly compound but a superior simple seta is often present.

Type species: *Pionosyllis compacta* Malmgren, 1867.

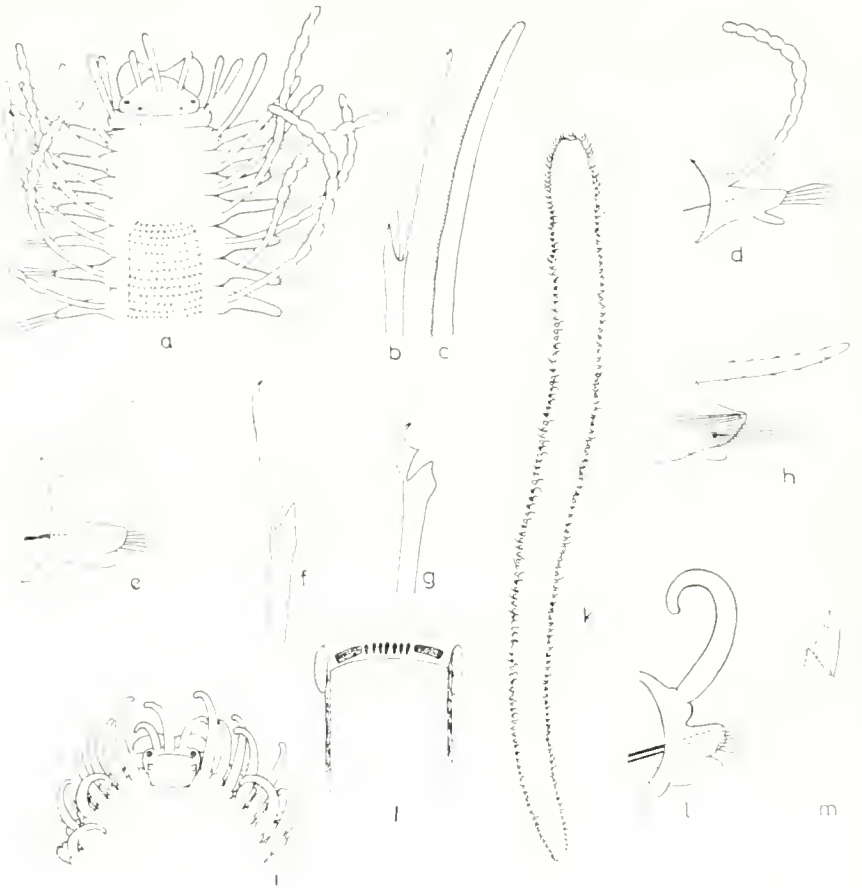

FIG. 12.7. *Syllides longocirrata*. (A) Anterior end. (B) Compound seta. (C) Simple seta. (D) Foot. *Odontosyllis gibba*. (E) Foot. (F) Seta. *Odontosyllis ctenostoma* (after Fauvel). (G) Seta. (H) Foot. *Odontosyllis polycera*. (I) Head. (J) Ventral half of pharynx showing teeth and cutting plates. (K) Entire worm (three times life size). (L) Foot. (M) Seta.

KEY TO SPECIES

1 Compound setae with unidentate blades (fig. 12.8.b). (Pharynx with a very large tooth) ***P. magnidens***

– Compound setae with bidentate blades 2

2 Superior compound setae with greatly elongated blades (fig. 12.8.g). (A needle-like simple seta) . . . . . ***P. ehlersiaeformis***

– Superior compound setae not much longer than the others. 3

3 Dorsal cirri with 16–30 indistinct rings. Body large, reaching 40 mm. . ***P. malmgreni***

– Dorsal cirri smooth. Body small, about 8 mm. . . . . ***P. longocirrata***

Pionosyllis magnidens Day, 1953
(fig. 12.8.a–c)

Pionosyllis magnidens Day, 1953: 416, fig. 3 a–e.

Body about 4 mm. long with 45 segments. Prostomium (fig. 12.8.a) broader than long. Two pairs of eyes. Palps united at the base and bent ventrally. Antennae tapered and wrinkled but not annulated. The pharynx has a very large dorsal tooth and extends back to setiger 4, the proventriculus continuing on to setiger 11. Dorsal cirri (fig. 12.8.c) similar to antennae and equal to the width of the body. Setigerous lobes truncate, ventral cirri conical. Compound setae with short, unidentate blades ending in bold hooks (fig. 12.8.b). No simple setae.

Type locality: Lamberts Bay, South Africa.

Records: Cape (32/18/i, 34/18/i) – several specimens on algae.

Pionosyllis cf. *ehlersiaeformis* Augener, 1913*
(fig. 12.8.d–h)

Pionosyllis ehlersiaeformis Augener, 1913: 225, pl. 3 fig. 32, text-fig. 31; Day, 1960: 313.

Body (fig. 12.8.e) uniformly pale, up to 8·5 mm. long with 70 segments. Prostomium broader than long with two pairs of eyes of which the anterior pair are much the larger. Palps long and fused basally. Antennae wrinkled but not ringed. Median antenna twice the length of the laterals. The pharynx has an anterior dorsal tooth and extends back to setiger 7; the proventriculus has 25 rows of points and extends on to setiger 13. Anterior dorsal cirri slender, similar to the antennae and as long as the body is broad. Later dorsal cirri in the middle of the body (fig. 12.8.d) shorter, less than half the body width. Setigerous lobes slender. Most of the compound setae (fig. 12.8.f) have bidentate blades of normal length but in the middle and posterior feet there are also one to two superior setae (fig. 12.8.g) with very long *Langerhansia*-type blades, plus a slender superior simple seta (fig. 12.8.h). Ovigerous females make tubes on hydroid stems and incubate their eggs; young released with ten setigers.

Type locality: Sharks Bay, Western Australia.

Records: South West Africa (22/14/i) around the Cape (s, d) to (34/25/s) – fairly common.

Distribution: Western Australia.

*Augener (1913 and 1918) stressed the point that *P. ehlersiaeformis* has compound setae in which the secondary tooth is stronger than the terminal. He also found a bidentate simple seta in posterior feet. In my material the secondary tooth of compound setae is weaker than the terminal and no inferior simple seta was found.

Pionosyllis malmgreni McIntosh, 1869
(fig. 12.8.i–k)

Pionosyllis malmgreni McIntosh, 1869: 414, pl. 16 fig. 10; McIntosh, 1904: 35.
Pionosyllis ehlersiaeformis: (Non Augener) Day, 1953: 415, fig. 3 d.

A large species reaching 40 mm. for 150 segments. Two pairs of eyes. Antennae and tentacular cirri short and jointed. Pharynx short with the dorsal tooth one-third the way back. Proventriculus extending from setiger 6–9 with 30 rows of points. Anterior dorsal cirri (fig. 12.8.i) equal to body width with 20–30 well marked joints; later cirri shorter, equal to half body width and with only 16–20 indistinct joints or even smooth; ventral cirri long. Setae with blades decreasing in length inferiorly (fig. 12.8.j and k) but none with the greatly elongated *Langerhansia*-type blades seen in *P. ehlersiaeformis*. Apex of blade bidentate with a stout secondary tooth. No superior simple seta.

Type locality: Scotland.

Records: Cape (33/17/s, 34/18 i, s, 34/20 i).

Distribution: Scotland.

Pionosyllis longocirrata Saint-Joseph, 1887
(fig. 12.8.l–m)

? *Pionosyllis longocirrata* Saint-Joseph, 1887: 160, pl. 8 figs. 24–29; Fauvel, 1923: 288, fig. 110 h–l.
Pionosyllis cf. *longocirrata*: Day, 1953: 418, fig. 3 e; Day, 1960: 314.

A small species 8 mm. long. Body soft and very fragile. Pharynx short with an anterior tooth. Proventriculus with 30 rows of points. Antennae and anterior dorsal cirri smooth, exceedingly long; later dorsal cirri (fig. 12.8.m) somewhat shorter but still exceeding twice the width of the body. Setigerous lobes long, ventral cirri large and triangular. Setae (fig. 12.8.l) very long and fine with slender, bidentate blades. The terminal tooth (fig. 12.8.l[1]) is strong and hooked and the secondary tooth is weak and directed towards it. No simple setae seen.

Type locality: France.

Records: Cape (33/18/s) – one record.

Distribution: English Channel (i); Mediterranean (s).

EUSYLLIS Malmgren, 1867

Body fragile. Prostomium with three antennae and palps fused at the base. Two pairs of tentacular cirri. Antennae, tentacular cirri and dorsal cirri indistinctly ringed. Ventral cirri present. Pharynx chitinised having a large, anterior, dorsal tooth and a denticulate rim.

Type species: *Eusyllis blomstrandi* Malmgren, 1867.

Key to Species

1 Blades of compound setae all rather short . . . . . ***E. blomstrandi****
– Blades of compound setae include two to three long and numerous short forms ***E. assimilis***

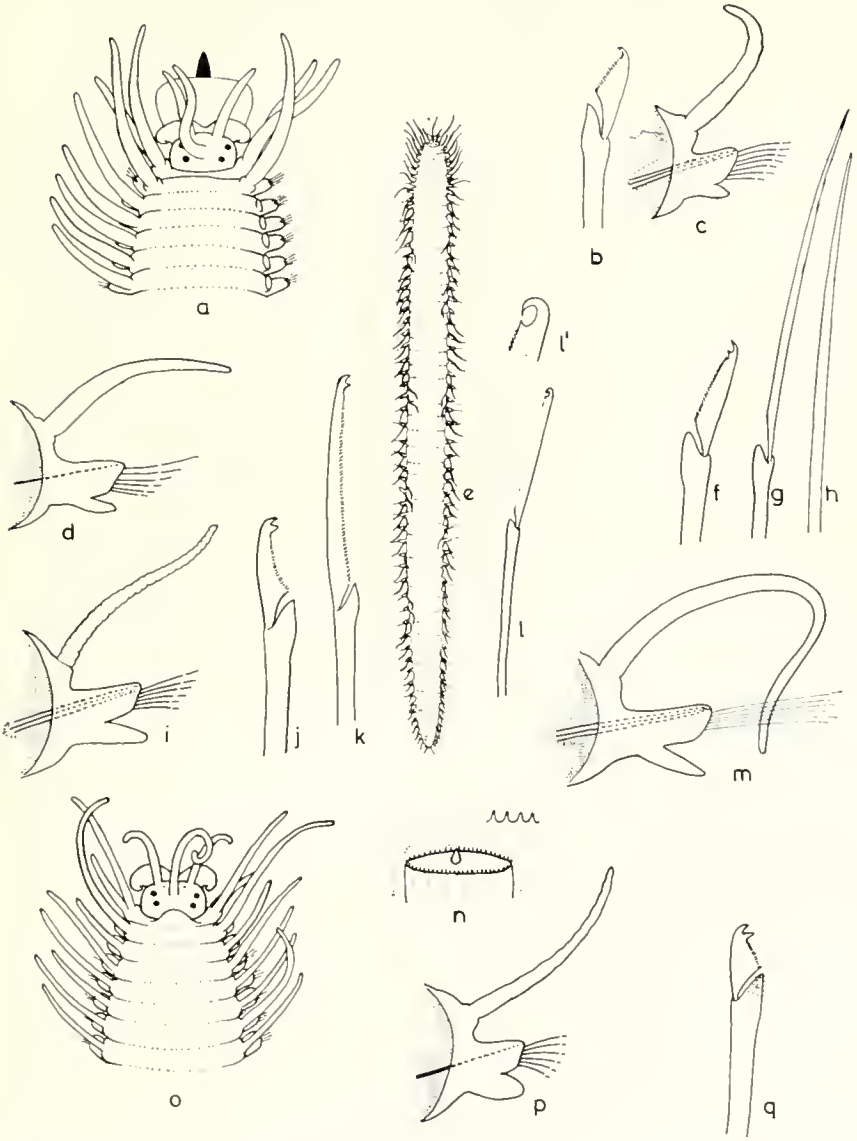

FIG. 12.8. *Pionosyllis magnidens*. (A) Head. (B) Seta. (C) Foot. *Pionosyllis* cf. *ehlersiaeformis*. (D) Middle foot. (E) Entire worm (10 times life size). (F) Normal compound seta. (G) Superior *Langerhansia*-type seta. (H) Superior simple seta. *Pionosyllis malmgreni*. (I) Anterior foot. (J) Inferior seta. (K) Superior seta. *Pionosyllis longocirrata*. (L) Seta. (M) Foot. *Eusyllis blomstrandi*. (N) Ventral view of anterior end of pharynx. (O) Anterior end. (P) Middle foot. (Q) Seta.

T

Eusyllis blomstrandi Malmgren, 1867
(fig. 12.8.n-q)

Eusyllis blomstrandi, Malmgren, 1867: 159, pl. 7 fig. 43; Fauvel, 1923: 293, fig. 112 h–m.

Length about 10 mm. for 50 segments. Body rather swollen and fragile. Prostomium broader than long with six eye-spots. Median antenna 1·5 times laterals. Palps large and fused only at the base. A small occipital fold. Pharynx (fig. 12.8.n) short and chitinised with an anterior dorsal tooth and a denticulate rim with about 40 minute teeth. Proventriculus elongate with 50 rows of points. Tentacular cirri and anterior dorsal cirri indistinctly ringed and slightly longer than the body is broad but posterior ones (fig. 12.8.p) smoother and shorter than body width. All ventral cirri stout and conical. Compound setae (fig. 12.8.q) all short with strongly bidentate blades. A posterior superior simple seta.

Type locality: Spitzbergen.

Records: Not recorded from southern Africa.

Distribution: Arctic; North Atlantic from the North Sea, France and Canada to Massachusetts; Mediterranean.

Eusyllis assimilis Marenzeller, 1875

Eusyllis assimilis Marenzeller, 1875: 30, pl. 7 fig. 2; Fauvel, 1923: 294, fig. 112 a–g.

Body rather stout and fragile, up to 20 mm. long for 70 segments. Prostomium almost rectangular with four eye-spots and two ocular specks. Antennae indistinctly ringed. Palps fused at the base and bent ventrally. Pharynx short and chitinised with an anterior dorsal tooth and a minutely denticulate rim. Proventriculus long with 50–80 rows of points. Dorsal cirri alternately longer and shorter but none longer than the width of the body; all are smooth or vaguely annulated. Ventral cirri as compressed cones, all (including the first) being shorter than the setigerous lobes. Acicula with bent tips. Setae compound with strongly bidentate blades of unequal length; two to three superior ones are long and the rest short and triangular. Posterior feet have simple superior and inferior setae as well as compound ones.

Type locality: Mediterranean Sea.

Records: Cape (33/18/s).

Distribution: N.E. Atlantic (English Channel); Mediterranean; W. Canada to W. Mexico; Angola (i).

IRMULA Ehlers, 1913*

Body vermiform and fragile with uniramous parapodia. Dorsal and ventral cirri present. Antennae and dorsal cirri long and not jointed. Setae compound and falcigerous. Prostomium with three antennae and four eyes. Palps fused basally and not jointed. Six pairs of tentacular cirri on three partially fused segments. Pharynx with an anterior dorsal tooth. Proventriculus well developed.

Type species: *Irmula spissipes* Ehlers, 1913.

*Ehlers included *Irmula* in the family Hesionidae.

Irmula spissipes Ehlers, 1913
(fig. 12.9.a–c)

Irmula spissipes Ehlers, 1913: 468, pl. 29, figs. 11–13.

Body vermiform and tapered; length 8 mm. for 60 segments; anterior breadth without parapodia 0·52 mm. Prostomium (fig. 12.9.a) rounded anteriorly, twice as broad as long. Four eyes widely separated. Three slender antennae, the median arising near the posterior margin and the shorter laterals in front of the eyes. Neither the antennae nor tentacular cirri nor dorsal cirri are articulated. Palps stout, fused basally. Pharynx with a stout dorsal tooth anteriorly; proventriculus extending over 12 segments with 40 rows of points. Tentacular region indistinctly segmented with six pairs of long thread-like tentacular cirri. Setigerous segments very short and intersegmental constrictions poorly marked. Parapodia (fig. 12.9.b) uniramous with long thread-like dorsal cirri equal to twice the segmental breadth; setigerous lobes rather long and obliquely truncate with numerous long setae; ventral cirri digitiform, shorter than the setigerous lobes. Setae (fig. 12.9.c) compound with long (?) bidentate blades.

Type locality: Simonstown, South Africa (only the holotype known).

BRANIA Quatrefages, 1865
(including *GRUBEA* Quatrefages, 1865)

Body small, less than 10 mm. long. Palps fused for at least half their length and produced forwards. Two pairs of tentacular cirri. Pharnyx straight with an anterior dorsal tooth. Dorsal cirri short, not annulated, usually bottle-shaped. Ventral cirri present. Setae mainly compound but a superior and an inferior seta are present in posterior segments at least. Natatory setae only present in mature males. Developing eggs and embryos carried on the backs of females.

Type species: *Exogone pusilla* Dujardin, 1851.

Key to Species

1 Dorsal cirri truncate and contain two packets of fibrillar structures (fig. 12.9.d) . ***B. pusilla***
– Dorsal cirri bottle-shaped (fig. 12.9.e) 2
2 Dorsal cirrus of first setiger markedly longer than that of second (fig. 12.9.g) ***B. furcelligera***
– Dorsal cirri of first and second setiger subequal (fig. 12.9.l) . . . ***B. rhopalophora***

Brania pusilla (Dujardin, 1839)
(fig. 12.9.d–f)

Exogene pusilla Dujardin, 1851: 298, pl. 5 figs. 9–10.
Grubea pusilla: Fauvel, 1923: 299, fig. 115 a–f.

Body about 2·5 mm. long with 28–35 segments. Prostomium (fig. 12.9.f) with four eyes in a posterior arc and three tapered antennae, the median being inserted far back. Palps fused and produced forwards. Pharynx with an anterior tooth. Proventriculus extending over two segments with 12–15 rows of points. Tentacular

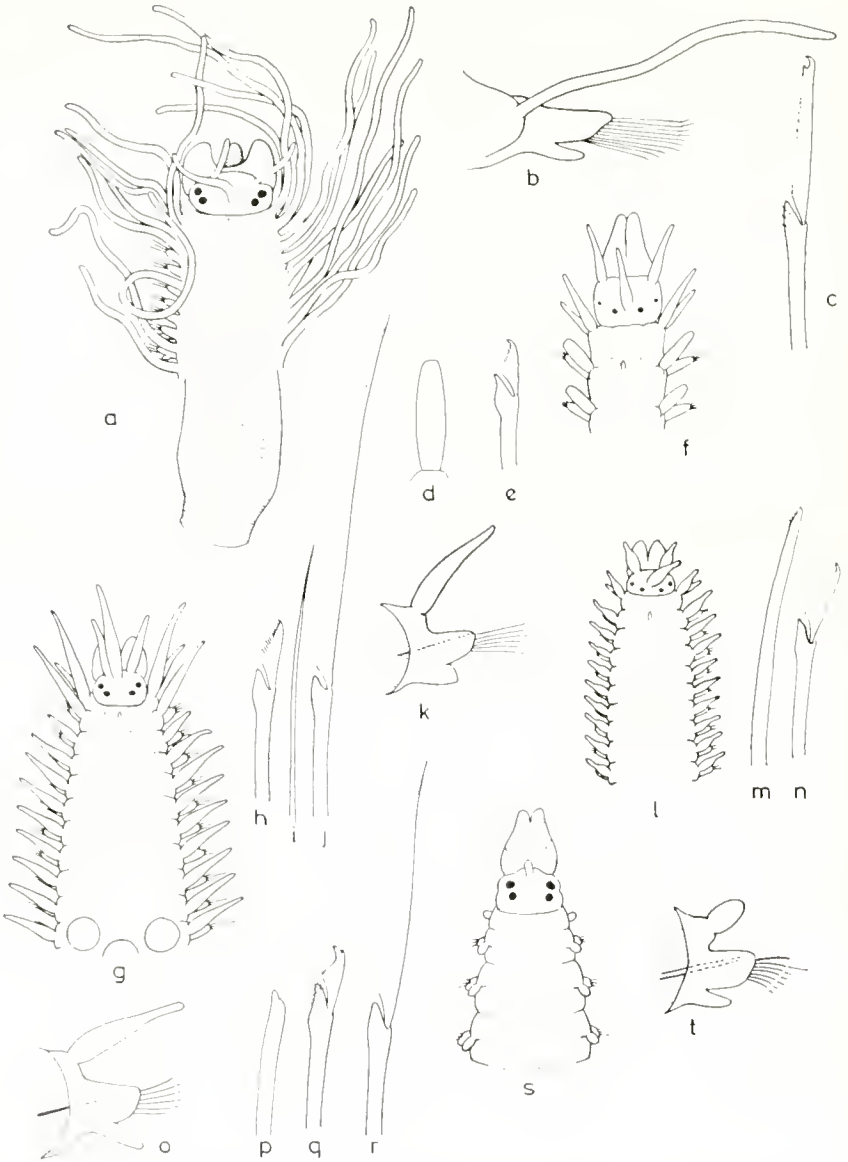

FIG. 12.9. *Irmula spissipes* (from Ehlers, 1908). (A) Anterior end. (B) Foot. (C) Seta. *Brania pusilla* (after Claparède). (D) Dorsal cirrus. (E) Seta. (F) Head. *Brania furcelligera*. (G) Anterior end. (H) Normal compound seta. (I) Superior simple seta. (J) Superior compound seta of posterior foot. (K) Foot. *Brania rhopalophora*. (L) Anterior end. (M) Superior simple seta. (N) Compound seta. (O) Foot. *Spermosyllis capensis*. (P) Superior simple seta. (Q) Normal compound seta. (R) Superior compound seta. (S) Head. (T) Foot.

segment separate from the prostomium and bears two pairs of bottle-shaped tentacular cirri. Dorsal cirri present on all segments including the second. Each is fusiform, truncate distally, and contains two yellowish fibrillar bodies (fig. 12.9.d). Acicula with swollen, fist-shaped ends. Setae include several compound forms with unidentate blades (fig. 12.9.e) plus superior and inferior simple setae in posterior segments.

TYPE LOCALITY: Coast of France.

RECORDS: ? (26/15/i) – one doubtful specimen (see Augener, 1918: 296).

DISTRIBUTION: N.E. Atlantic from English Channel (i) to Morocco (s); Mediterranean.

Brania furcelligera (Augener, 1913)*
(fig. 12.9.g–k)

Grubea furcelligera Augener, 1913: 256, pl. 3 figs. 20–21, text-fig. 39; Day, 1960: 315.

Body about 5 mm. long with up to 40 segments. Palps fused for half of their length. A pair of bottle-shaped lateral antennae inserted on the anterior margin of the prostomium, and a median, twice the length of the laterals, inserted further back (fig. 12.9.g). Four eyes and two ocular specks. Pharynx reaching setiger 4 and proventriculus extending on to setiger 6. Dorsal cirri all bottle-shaped (fig. 12.9.k) and present on all setigers including setiger 2. Most dorsal cirri are longer than half the body width but that on setiger 2 is obviously shorter. Most of the compound setae have swollen shaft-heads and minutely bidentate, dagger-shaped blades (fig. 12.9.h). A superior simple seta (fig. 12.9.i) in anterior feet. In posterior feet of ovigerous females three to four superior compound setae with extremely long blades (fig. 12.9.j).

TYPE LOCALITY: Geraldton, Western Australia.

RECORDS: Cape (34/18/s) – with eggs.

DISTRIBUTION: Western Australia (s).

Brania rhopalophora (Ehlers, 1897)
(fig. 12.9.l–o)

Grubea rhopalophora Ehlers, 1897; 53, pl. 3 figs. 66–70.

Body up to 4 mm. long with 34 segments. Ends of palps separate. Prostomium (fig. 12.9.l) with four eyes close together on either side and three equal, bottle-shaped antennae; the laterals arise from the anterior margin but the median is set well back. Pharynx reaching setiger 3 and proventriculus extending on to setiger 6.

*The identification of South African specimens as Augener's *Grubea furcelligera* from Western Australia is somewhat uncertain. Augener's figures show a rather different shape for the antennae and dorsal cirri, the normal compound setae are described as unidentate not minutely bidentate and no mention is made of long-bladed compound setae in posterior feet.

Tentacular cirri similar to the antennae but smaller, the ventral tentacular cirrus being shorter than the dorsal. A dorsal cirrus on setiger 2. Dorsal cirri (fig. 12.9.o) bottle-shaped and less than half the body width. Aciculum with a knobbed end. About six compound setae (fig. 12.9.n) per foot, with unidentate blades of varying length. A superior simple seta (fig. 12.9.m) with a serrate end after the first few feet; in posterior feet it becomes stouter than all other setae.

Type locality: Terra del Fuego.

Records: South West Africa (22/14/i) around the Cape (34/18/s to 34/22/s) – fairly common.

Distribution: Chile (s), Magellan area (s) and subantarctic islands (i).

SPERMOSYLLIS Claparède, 1864

Body minute. Prostomium with the palps fused completely and directed forwards. A single median antenna. A single pair of tentacular cirri. Pharynx with a single dorsal tooth. Antenna, tentacular cirri and dorsal cirri small and papilliform. Ventral cirri may be absent from some feet. Development direct and eggs attached to the female.

Type species: *Spermosyllis torulosa* Claparède, 1864.

Spermosyllis capensis Day, 1953
(fig. 12.9.p–t)

Spermosyllis capensis Day, 1953: 419, fig. 3 g-l.

Length 12 mm. for 60 segments. Prostomium (fig. 12.9.s) broader than long with the single median antenna arising near the anterior margin. Palps large, tapered, transversely striated and fused throughout their length. The pharynx extends back to setiger 6 and the proventriculus which has 25 rows of points continues on to setiger 9. Tentacular segment separate from the prostomium but partially fused to the first setiger. Ovoid dorsal cirri present on all setigers (fig. 12.9.t). Ventral cirri present throughout. Setigerous lobes obliquely truncate. Setae include a superior simple seta (fig. 12.9.p) from the 12th segment onwards, one to three compound setae with long, knife-like blades (fig. 12.9.r) and five to eight compound setae with short, falcigerous blades with the secondary tooth large and the terminal one minute (fig. 12.9.g).

Type locality: Langebaan Lagoon, South Africa.

Records: Cape (33/18/i) – a single specimen.

ANGUILLOSYLLIS Day, 1963

Body minute. Palps well developed, elongated and fused for half their length. Three minute antennae. One pair of tentacular cirri. Pharynx straight and unarmed. Dorsal cirri long but not annulated. Ventral cirri present. Setigerous lobes of parapodia with a contractile dorsal projection.

Type species: *Anguillosyllis capensis* Day, 1963.

Anguillosyllis capensis Day, 1963
(fig. 12.10.z–zzz)

Anguillosyllis capensis Day, 1963a: 400, fig. 5 a–d.

A minute thread-like worm about 5 mm. long for 30 segments and tapered at each end. Prostomium (fig. 12.10.zz) broader than long; it lacks eyes but has three minute papilliform antennae and a pair of very large tapered palps fused for half their length. They extend straight forward like a pointed rostrum. Tentacular segment distinct from the prostomium with one pair of papilliform tentacular cirri arising from the sides. Pharynx short, broad and straight reaching setiger 3. No visible dorsal tooth and the whole pharynx appears to be unarmed. Proventriculus barrel-shaped; it extends from setiger 3 to setiger 6 with about 30 rows of points. Body smooth and slender with segments about four times as broad as long. Parapodia (fig. 12.10.z) large with long, often coiled dorsal cirri and each setigerous lobe with a tapered dorsal projection which appears to be retractile. Ventral cirri distinct and slender. Setae (fig. 12.10.zzz) all long, fine and compound; the blades are uniformly slender and each ends in a blunt apical tooth.

Type locality: Agulhas Bank, South Africa.

Records: Cape (33/17/d and 34/23/d).

Distribution: Endemic.

EXOGONE Oersted, 1845

Body minute. Palps well developed and fused throughout. Three antennae and one rudimentary pair of tentacular cirri. Pharynx with a single anterior dorsal tooth. Dorsal cirri small and ovoid. Ventral cirri present. Eggs fixed to the female.

Type species: *Exogone naidina* Oersted, 1845.

Key to Species

1 Dorsal cirri on all setigers including the second 2
– No dorsal cirrus on setiger 2 3
2 Median antenna club-shaped and much longer than the laterals (fig. 12.10.b)
E. clavator (p. 272)
– All three antennae minute and shorter than the prostomium (fig. 12.10.h)
E. verugera (p. 272)
3 Compound setae all similar and unidentate (fig. 12.10.w) . . . ***E. normalis*** (p. 275)

– Superior compound seta different from the rest 4
4 One superior compound seta with a swollen shaft-head and a broad triangular blade (fig. 12.10.n) . . . . . ***E. heterosetosa**** (p. 274)
– One to three superior compound setae each with a normal shaft-head and a narrow dagger-like blade (fig. 12.10.s) . . . . . ***E. gemmifera*** (p. 274)

Exogone clavator Ehlers, 1913
(fig. 12.10.a–f)

Exogone clavator Ehlers, 1913 : 485, pl. 33 figs. 1–6; Day, 1953 : 418, fig. 4 d–f.

Body (fig. 12.10.a) slender and about 4·5 mm. long for 40 to 50 segments. Prostomium (fig. 12.10.b) broader than long with four eyes, short lateral antennae and a much longer club-shaped median antenna which arises from between the eyes. Palps large and fused almost to the tips. Tentacular cirri minute and ovoid. Pharynx about three segments long with an anterior dorsal tooth. Proventriculus covers about 2·5 segments and has 25 rows of points. Dorsal cirri (fig. 12.10.c) ovoid and present on all segments including the second. Ventral cirrus slightly smaller than the dorsal and present on all feet. Setigerous lobe truncate and bears five to six setae and one aciculum with a knobbed end. A superior simple seta (fig. 12.10.e) with an obliquely truncate end appears about the 10th foot and gradually becomes stouter; an inferior simple seta similar to the dorsal one appears on posterior segments. Two superior compound setae (fig. 12.10.d) with long sword-shaped blades in the first foot, later only one and finally none in posterior feet. About three normal compound setae (fig. 12.10.f) with short bidentate, chopper-shaped blades with the terminal tooth minute and the secondary tooth larger.

Type locality : False Bay, South Africa.

Records : South West Africa (22/14/i), around the Cape (e, i, s, d) to (34/25/s) – common.

Distribution : Endemic.

Exogone verugera (Claparède, 1868)
(fig. 12.10.g–l)

Paedophylax veruger Claparède, 1868 : 213, pl. 12 fig. 3.
Exogone verugera : Fauvel, 1923 : 307, fig. 117 m–r.

Body thread-like, about 5 mm. long with 35–45 segments. Prostomium (fig. 12.10.h) broader than long. Tentacular segment distinct but in contracted specimens it forms a sheath over the posterior pair of eyes. Palps large and tapered. Four large coalescent eyes and three small subequal piriform antennae which are shorter than the prostomium. Pharynx reaching setiger 5 and proventriculus extending over two segments to setiger 7 with 25–30 rows of points. Dorsal cirri (fig. 12.10.g) ovoid and present on all setigers including the second. Compound setae include about five with very small falcigerous blades (fig. 12.10.k) and a superior one with a slender

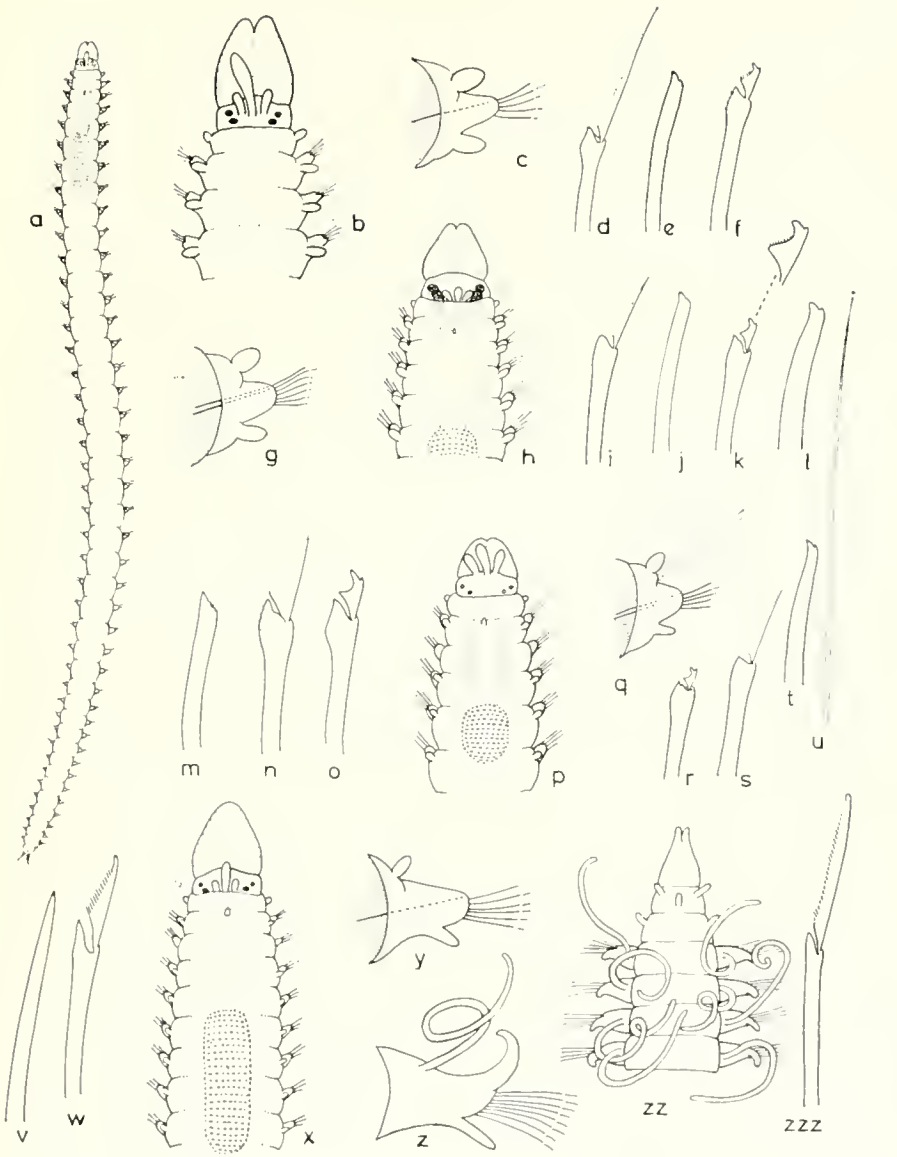

FIG. 12.10. *Exogone clavator*. (A) Entire worm (25 time slife size). (B) Head. (C) Foot. (D) Superior compound seta. (E) Simple seta. (F) Normal compound seta. *Exogone verugera*. (G) Foot. (H) Head. (I) Superior compound seta. (J) Simple seta. (K) Normal compound seta. (L) Simple seta from posterior foot. *Exogone heterosetosa*. (M) Simple seta. (N) Superior compound seta. (O) Normal compound seta. *Exogone gemmifera*. (P) Head. (Q) Foot with natatory setae. (R) Normal compound seta. (S) Superior compound seta. (T) Simple seta. (U) Natatory seta. *Exogone normalis*. (V) Simple seta. (W) Compound seta. (X) Head. (Y) Foot. *Anguillosyllis capensis*. (Z) Foot. (ZZ) Head. (ZZZ) Seta.

knife-like blade (fig. 12.10.i). A superior simple seta with an obliquely truncate blade (fig. 12.10.j) appears after the first few feet and later a stout inferior one (fig. 12.10.l).

Type locality: Gulf of Naples.

Records: South West Africa (26/15/s); Cape (33/18/s, 34/18/i, s) – several specimens.

Distribution: N. Atlantic (Sweden (d), Plymouth (i), North Carolina (s,) Morocco, Madeira); Mediterranean; N.W. Japanese Sea; Southern California (s).

Exogone heterosetosa McIntosh, 1885
(fig. 12.10.m–o)

Exogone heterosetosa McIntosh, 1885: 205; Monro, 1939: 115, fig. 9; Day, 1954: 13, fig. 2 b–d.

Body minute averaging 2 mm. Surface smooth. Prostomium broader than long with two pairs of eyes and sometimes anterior eye-specks as well. Median antenna equal to prostomial length, laterals rather shorter. Tentacular segment distinct. Dorsal cirri ovoid, absent from setiger 2. Setae of three types; (a) a superior simple seta with an obliquely truncate tip (fig. 12.10.m), (b) a superior compound seta with a swollen shaft-head and a triangular blade not more than three times as long as broad (fig. 12.10.n), (c) about three compound setae with short bidentate blades with the secondary tooth larger than the apical one (fig. 12.10.o).

Type locality: Marion Island.

Records: Not recorded from southern Africa.

Distribution: Subantarctic (i, s, d); Antarctica (d); Chile (s); Tristan da Cunha (i).

Exogone gemmifera Pagenstecher, 1862
(fig. 12.10.p–u)

Exogone gemmifera Pagenstecher, 1862: 267; Fauvel, 1923: 305, fig. 117 a–d; Day, 1960: 317.

Body minute, about 2–4 mm. long with 24–33 setigers. Prostomium (fig. 12.10.p) broader than long with two pairs of eyes (sometimes not pigmented) and three claviform antennae inserted at the anterior margin of the prostomium. The median antenna is longer than the laterals and is just shorter than the palps which are relatively broad and rounded in front. The pharynx extends back to setiger 4 and the short rounded proventriculus occupies one or one and a half segments and has about 12 rows of points. Dorsal cirri (fig. 12.10.q) ovoid and absent from setiger 2. Ventral cirri small. Setae include (a) a superior simple seta with a curved tip (fig. 12.10.s), (b) one to three superior compound setae with fine dagger-like blades (fig. 12.10.s), (c) five to eight compound setae having minute bidentate blades with

the terminal tooth hardly visible (fig. 12.10.r) and (d) an inferior simple seta in posterior segments. Breeding individuals develop a tuft of fine natatory setae (fig. 12.10.u) just below the dorsal cirrus (fig. 12.10.q).

Type locality: Cette, France.

Records: Cape (33/17/s, 34/18/s) – several specimens.

Distribution: Arctic; N. Atlantic (English Channel (i, s), North Carolina (s)); Mediterranean; Tropical West Africa (i, s); N. Pacific (Behring Sea, to Japan).

Exogone normalis Day, 1963
(fig. 12.10.v–y)

Exogone normalis Day, 1963a: 401, fig. 5 e–h.

Body about 5 mm. long, pale, quite smooth. Palps (fig. 12.10.x) completely fused, large, longer than broad. Prostomium short with two to three pairs of eyes. Median antenna exceeds length of prostomium and reaches base of palps. Lateral antennae small, only one third the length of the median. Tentacular segment indistinct, tentacular cirri as minute papillae half the size of the first pair of dorsal cirri. Pharynx reaching setiger 5 and proventriculus extending on to setiger 10 with about 23 rows of points. Dorsal cirri (fig. 12.10.y) small and ovoid, absent from setiger 2. Ventral cirri longer and project beyond the setigerous lobes.

About 12 setae anteriorly, reduced to about five posteriorly. Compound setae all similar with straight unidentate blades of moderate length and pointed shaft-heads (fig. 12.10.w). No specialised superior compound seta. A superior simple seta (fig. 12.10.r) in the form of a blunt needle appears about setiger 10 and becomes much stouter in posterior segments. The last few segments have an inferior simple seta as well.

Type locality: Agulhas Bank, South Africa.

Records: Cape (34/18/s and 34/22/d to 33/25/s).

Distribution: Endemic.

SPHAEROSYLLIS Claparède, 1863

Body minute. Palps well developed and fused throughout. Head with three antennae and one pair of tentacular cirri. Pharynx with a single anterior dorsal tooth. Antennae and dorsal cirri with swollen bases and tapered tips. Ventral cirri present. Skin often covered with adhesive papillae. Eggs fixed to the female.

Type species: *Sphaerosyllis hystrix* Claparède, 1863.

Key to Species

1 A dorsal cirrus on setiger 2. (Two pairs of coalescent eyes. Middle and posterior part of the body with adhesive papillae) (fig. 12.11.a) . . . . . ***S. semiverrucosa***

– Dorsal cirrus absent from setiger 2 2

2 Capsules of fibrillar structures above middle and posterior parapodia (fig. 12.11.i). Two pairs of coalescent eyes. (Antennae long) . . . . . ***S. capensis***
– Capsules absent from above parapodia. Three pairs of eyes 3
3 Adhesive papillae on palps and back (fig. 12.11.k) . . . . . ***S. erinaceus***
– No adhesive papillae on palps and back (fig. 12.11.o) . . . . . ***S. sublaevis***

Sphaerosyllis semiverrucosa Ehlers, 1913
(fig. 12.11.a–e)

Sphaerosyllis semiverrucosa Ehlers, 1913: 483, pl. 32 figs. 5–9.

A stout species resembling an elongated dirty sausage (fig. 12.11.a). Length 4·5 mm. for 34 segments. From about the 7th segment onwards it is covered with minute papillae to which dirt adheres. Prostomium (fig. 12.11.b) with two pairs of eyes coalesced to form a single pair. Palps broad, short and completely fused dorsally. Antennae very short and onion-shaped, the median arising far back near the posterior margin of the prostomium. Tentacular segment very short and partially overlapping the prostomium with one pair of tentacular cirri similar to the antennae. Five to six anterior segments smooth, later ones papillose. Dorsal cirri (fig. 12.11.c) present on all setigers, each small and onion-shaped with the terminal portion partially retractile into the base. Compound setae (fig. 12.11.e) with short unidentate blades. A superior curved simple seta (fig. 12.11.d) present in all parapodia. Natatory setae from the 8th setiger in the male.

TYPE LOCALITY: False Bay, South Africa.

RECORDS: Cape (34/18/s) – several specimens.

DISTRIBUTION: Endemic.

Sphaerosyllis capensis Day, 1953
(fig. 12.11.g–j)

Sphaerosyllis hystrix var. *capensis* Day, 1953: 420, fig. g–l.

Body 3 mm. long with 29 setigers and a lightly papillose surface. Prostomium (fig. 12.11.j) broader than long with two pairs of coalescent eyes and three long, piriform antennae on the anterior margin. Palps fused and bent ventrally. Tentacular segment partially fused to the prostomium and bearing a single pair of tentacular cirri level with the eyes. The pharynx has an anterior tooth, extends back to setiger 2 and is surrounded by brownish glands. Proventriculus about two segments long and has 10–14 rows of points. Dorsal cirri (fig. 12.11.i) piriform and absent from setiger 2. A spherical vesicle containing fibrillar structures is embedded in the back next to the dorsal cirrus from about setiger 4 onwards. The setigerous lobe is conical with two apical papillae. Simple superior setae with curved tips (fig. 12.11.g); compound setae with unidentate blades (fig. 12.11.h). An inferior simple seta appears in posterior feet. Ventral cirri digitiform.

TYPE LOCALITY: Cape Agulhas, South Africa.

RECORDS: Cape (33/17/s, 31/20/i, 34/23/s, d, 31/26/d) – common on muddy sand.

DISTRIBUTION: Endemic.

Sphaerosyllis erinaceus Claparède, 1863
(fig. 12.11.k–n)

Sphaerosyllis erinaceus Claparède, 1863: 45, pl. 13 fig. 38; Fauvel, 1923: 302, fig. 115 q, r; Day, 1954: 13, fig. 2 d–g.
Sphaerosyllis perspicax Ehlers, 1908: 66, pl. 6 figs. 1–3.

Body 3 mm. long, rather flattened and completely covered with adhesive papillae which even extend on to the palps and parapodia. About 30 segments. Prostomium (fig. 12.11.k) broader than long with three pairs of eyes and three flask-shaped antennae of equal size, the median being further back than the laterals. Tentacular segment very short and embracing the prostomium so that the tentacular cirri arise on a level with the eyes. Tentacular cirri and dorsal cirri (fig. 12.11.l) similar to antennae but slightly larger. No dorsal cirrus on setiger 2. Pharynx with an anterior dorsal tooth and extends back to setiger 3. Proventriculus extends on to setiger 6 and has 15–18 rows of points. Ventral cirri small and cylindrical. Each foot with about five compound setae with unidentate blades (fig. 12.11.n) and from the 6th or 8th onwards a superior simple seta (fig. 12.11.m) with an oblique point is present. No glands above parapodia.

Type locality: Atlantic coast of France.

Records: South West Africa (22/14/i and 26/15/s) to western Cape (32/17/d) – several records.

Distribution: Ireland; English Channel (s); Arctic and N.W. Japanese Sea; Kerguelen.

Sphaerosyllis sublaevis Ehlers, 1913
(fig. 12.11.o–r)

Sphaerosyllis sublaevis Ehlers, 1913: 482, pl. 32, figs. 10–15; Day, 1960: 316.

A relatively large species up to 10 mm. long with 36 setigers. Dorsum smooth and adhesive papillae absent. Prostomium (fig. 12.11.o) arched anteriorly, with two pairs of eyes and eye-specks anteriorly. Antennae flask-shaped and about equal to the length of the prostomium. Palps stout and united dorsally for most of their length. Tentacular segment short and embracing the prostomium; tentacular cirri lateral in origin and similar in shape to the antennae but smaller. Dorsal cirri (fig. 12.11.p) similar to antennae anteriorly but more elongate posteriorly. No dorsal cirrus on setiger 2. Ventral cirri small and conical. Compound setae (fig. 12.11.r) with unidentate blades varying in length. A superior simple seta (fig. 12.11.q).

Type locality: False Bay, South Africa.

Records: Cape (34/18/s) – rare.

Distribution: Chile 42°S (s).

FIG. 12.11. *Sphaerosyllis semiverrucosa*. (A) Entire worm (20 times life size). (B) Head. (C) Middle foot. (D) Superior simple seta. (E) Compound seta. *Sphaerosyllis capensis*. (G) Superior simple seta. (H) Compound seta. (I) Middle foot. (J) Anterior end. *Sphaerosyllis ermaceus*. (K) Anterior end. (L) Foot. (M) Superior simple seta. (N) Compound seta. *Sphaerosyllis sublaevis*. (O) Anterior end. (P) Foot. (Q) Superior simple seta. (R) Compound seta. *Exogonoides antennata*. (S) Ventral view of head. (T) Middle foot. (U) Simple seta. (V) Compound seta from anterior foot. (W) Anterior end.

EXOGONOIDES Day, 1963

Prostomium with three ovoid frontal antennae. Palps small, ventral, partially fused. Pharynx straight without visible teeth. Proventriculus poorly developed. A single pair of ovoid tentacular cirri. Dorsal cirri ovoid, somewhat compressed. Ventral cirri absent (fused to setigerous lobe). Setae compound anteriorly but blades caducous and most segments have simple setae formed by loss of the blade of the anterior compound forms.

Type species: *Exogonoides antennata* Day, 1963.

Exogonoides antennata Day, 1963
(fig. 12.11.s–w)

Exogonoides antennata Day, 1963a: 403, fig. 5 j–n.

Body very long, smooth and slender measuring 35 mm. by 0·5 mm. for over 200 segments. Prostomium (fig. 12.11.w) bluntly conical with three ovoid frontal antennae, the median being superior to the laterals. Four eyes. Palps (fig. 12.11.s) small, ventral and only partially fused. Pharynx slender reaching setiger 6 and the margin does not appear to have teeth or sign of a trepan. Proventriculus short, dark, not muscular with about 15 rows of large, poorly marked "points". Tentacular segment short and distinct with one pair of small ovoid tentacular cirri.

Anterior segments short and crowded, posterior ones longer, only twice as broad as long. Dorsal cirri (fig. 12.11.t) present on all setigerous segments including the second. Each is ovoid, compressed and subequal to the setigerous lobe. Ventral cirri absent being completely fused to the posterior margin of the conical setigerous lobe. About three to four setae per parapodium. In the first few feet they are compound with short triangular, bidentate blades (fig. 12.11.v). Later setae lose their apices and become simple with short shafts and bluntly triangular tips (fig. 12.11.u).

Type locality: Agulhas Bank, South Africa.

Records: Cape (34/23,s) – two specimens known.

ALLUANDELLA Gravier, 1905

Prostomium with three short antennae and half covered by an occipital flap. Palps small, flattened, antero-ventral, and fused throughout their length. Two pairs of short tentacular cirri. No ventral cirri. Setae simple throughout. Pharynx short and straight, completely unarmed.

Type species: *Alluandella madagascariensis* Gravier, 1905.

Alluandella madagascariensis Gravier, 1905.

Alluandella madagascariensis Gravier, 1905c: 372, figs. 1–5.

Length 10 mm. by 0·85 mm. for 51 segments. Body with dark markings. Prostomium much broader than long. Three very short, subequal and conical antennae. A pair of large anterior eyes and brown pigment on posterior prostomium. A large occipital flap arising from the tentacular segment. Two pairs of short tentacular cirri. Palps very small, flattened, ventrally situated and completely fused. Pharynx short, straight, and unarmed. Proventriculus barrel-shaped with about 40 rows of points. Dorsum of body arched and parapodia ventro-lateral in origin. Segments short, about eight times broader than long. Dorsal cirri short, almost cylindrical, not annulated and arise well above the setigerous lobes; these are rather long with pre- and postsetal lips. No ventral cirri. A single aciculum per parapodium and about five simple setae which seem to be formed by the loss of the blade from the shaft.

Type locality: Fort Dauphin, Madagascar.

Records: Madagascar (i) – only known from the original record.

PROCERASTEA Langerhans, 1884

Body elongate with numerous segments. Prostomium with three antennae and four eyes. Palps indistinct. Pharynx long and S-shaped with a trepan of teeth at its entrance. Proventriculus ovoid. Two pairs of tentacular cirri and a single pair of dorsal cirri on the first setiger. Subsequent setigers without dorsal cirri and ventral cirri entirely absent. Reproduction by male and female stolons.

Type species: *Procerastea nematodes* Langerhans, 1884.

Procerastea perrieri Gravier, 1900
(fig. 12.12.a–f)

Procerastea perrieri Gravier, 1900: 35, pl. 1; Fauvel, 1923: 327, fig. 126 a–c.

Body (fig. 12.12.a) minute, about 8 mm. long with 40 segments. Prostomium (fig. 12.12.b) rounded and separate palps cannot be distinguished. Four large eyes and three sausage-shaped antennae. Tentacular cirri similar to antennae but smaller, the dorsal pair, though longer than the ventral pair, is still not equal to the breadth of the body. The single pair of dorsal cirri on the first setiger is similar to the tentacular cirri but shorter. Trepan (fig. 12.12.c) with very minute obscure teeth. Proventriculus with 20 rows of points. Normal parapodia (fig. 12.12.d) are reduced to stumpy setigerous lobes each bearing four to six setae. The superior seta (fig. 12.12.e) has a swollen shaft-head and an exceedingly fine dagger-like blade. Middle and inferior setae (fig. 12.12.f) show a tendency for fusion of blade to shaft-head. When fully developed the blades are chopper-shaped with a vestigial terminal

tooth and a large secondary one. Anal cirri large and ovoid. This species is found creeping on gymnoblastic hydroids.

TYPE LOCALITY: St.-Vaast-la-Hougue, France.

RECORDS: Cape (33/18/s) – a single record but many specimens.

DISTRIBUTION: English Channel (s); Falkland Islands.

AUTOLYTUS Grube, 1850

Palps fused and bent ventrally. Three antennae and two pairs of tentacular cirri. Dorsal cirri present throughout but ventral cirri absent. Appendages not jointed or ringed. Pharynx S-shaped or coiled, its margin armed with a trepan which is usually toothed. Reproduction by stolons which are dimorphic, the male (*Polybostrichus*) has bifid palps and three antennae while the female (*Saccocirrus*) has no palps and three antennae. Eggs carried in a ventral sac.

TYPE SPECIES: *Nereis prolifera* Müller, 1788.

KEY TO SPECIES

1 Nuchal epaulettes large and distinct, reaching the third setiger at least 2
– Nuchal epaulettes small, not reaching the third setiger 4
2 Nuchal epaulettes reaching the fourth or fifth setiger (fig. 12.12.j). (Trepan with 10 equal teeth) . . . . . ***A. tuberculatus*** (p. 281)
– Nuchal epaulettes not exceeding setiger 3 3
3 Trepan with 18 teeth alternately large and small. Body banded with black (fig. 12.12.k, n) . . . . . ***A. charcoti*** (p. 283)
– Trepan with 16–20 equal teeth. Body uniformly pale . . . . ***A aurantiacus****
– Trepan with 20 teeth alternately large and small. Body with red rectangles which fade in spirit (fig. 12.12.p, r) . . . . . ***A. pictus*** (p. 284)
4 Trepan with numerous very minute teeth. (First pair of dorsal cirri much longer than the rest) . . . . . ***A. maclearnus*** (p. 284)
– Trepan with 10–40 distinct teeth 5
5 Trepan with 10 equal teeth. (Dorsal cirri relatively short) . . ***A. prolifer*** (p. 284)
– Trepan with 40 teeth, alternatively large, medium, small, medium, large, etc. ***A. bondei*** (p. 285)

Autolytus tuberculatus (Schmarda, 1861) (fig. 12.12.g–j)

Cirrosyllis tuberculata Schmarda, 1861: 76, pl. 28 fig. 223.
Autolytus tuberculatus: Augener, 1918; 307; Day, 1953: 421.

Body (fig. 12.12.g) about 12 mm. long with about 60 segments and uniformly pale in spirit but salmon pink when fresh. Prostomium (fig. 12.12.j) rounded with three stout antennae, the laterals about as long as the body is broad and the median considerably longer. Pharynx S-shaped and armed with a trepan having 10 blunt teeth. Proventriculus extending from setiger 6 to 12 with about 40 rows of points. Nuchal epaulettes very long and prominent, diverging from the posterior margin

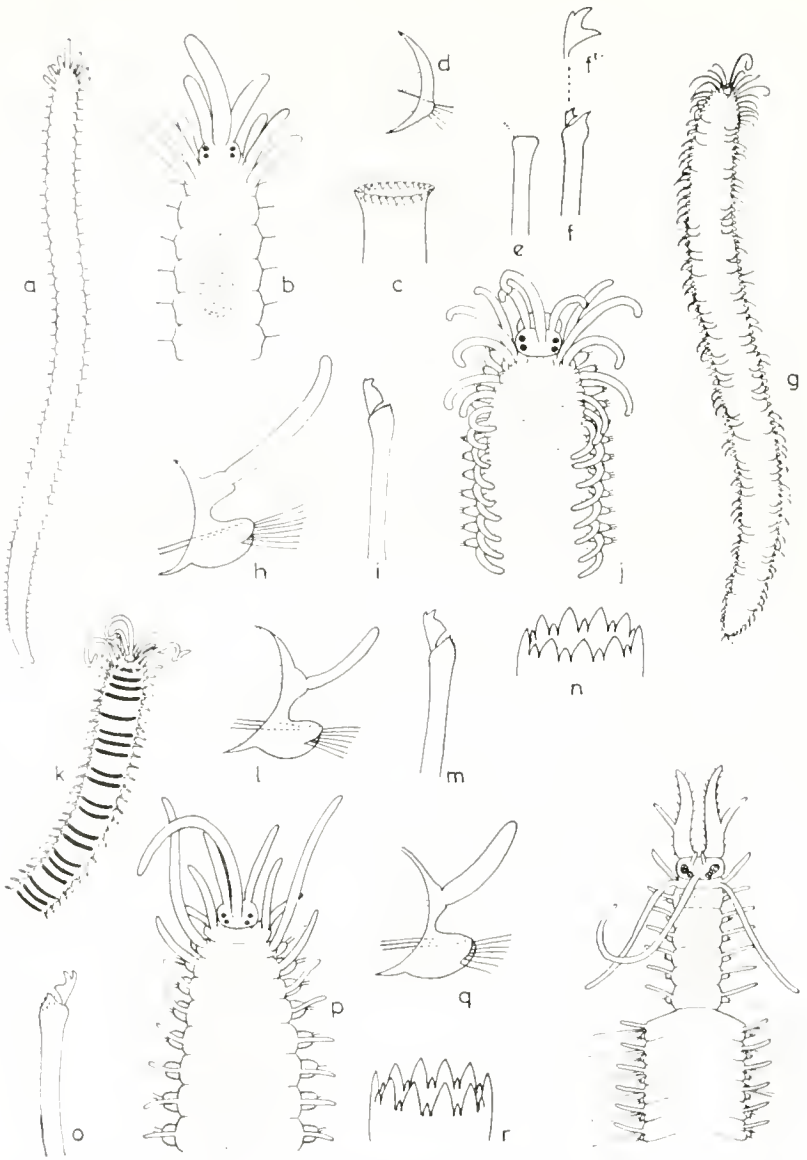

FIG. 12.12. *Procerastea perrieri*. (A) Entire worm (10 times life size). (B) Head. (C) Margin of pharynx. (D) Foot. (E) Superior seta. (F) Normal compound seta. *Autolytus tuberculatus*. (G) Entire worm (seven times life size). (H) Foot. (I) Seta. (J) Anterior end. *Autolytus charcoti*. (K) Anterior end. (L) Foot. (M) Seta. (N) Rim of pharynx. *Autolytus pictus* (modified from St. Joseph). (O) Seta. (P) Anterior end. (Q) Foot. (R) Rim of pharynx. (S) Anterior end of *Polybostrichus* stage.

of the prostomium to the dorsal cirri of setiger 5. Anterior dorsal cirri mounted on stout cirrophores, cylindrical and of varying length, the first few being longer than those of middle segments (fig. 12.12.h) which are about equal to half the body width ; all dorsal cirri are alternately longer and shorter. Setae (fig. 12.12.i) with ovoid shaft-heads and obscurely bidentate blades.

Type locality : Cape of Good Hope.

Records : Cape (34/18/i, s, 34/25/s) – common on hydroids.

Distribution : Endemic.

Autolytus charcoti Gravier, 1906
(fig. 12.12.k–p)

Autolytus charcoti Gravier, 1906b : 283 ; Gravier, 1907 : 7, pl. 1, figs. 1–2 ; Day, 1960 : 317.
? *Autolytus afer* Ehlers, 1908a : 46.

Body up to 24 mm. long for 100 segments with conspicuous black intersegmental bands encircling the body at fairly regular intervals (fig. 12.12.k). Prostomium broader than long. Two pairs of eyes. Antennae, tentacular cirri and the first pair of dorsal cirri longer than the segmental width. Later dorsal cirri less than half body width (fig. 12.12.l). Pharynx S-shaped ; trepan (fig. 12.12.n) with 18 teeth alternately large and small. Proventriculus extending over four setigers with about 60 rows of points. Diverging nuchal epaulettes extend from the prostomium back to setiger 2 or 3. Setae (fig. 12.12.m) with denticulated shaft-heads and bidentate blades.

Type locality : Antarctica.

Records : Cape (33/18/s, 34/18/s, 34/25/s) – three records only.

Distribution : Antarctica (s).

Autolytus aurantiacus (Claparède, 1868)

Proceraea aurantiaca Claparède, 1868 : 219, pl. 15 fig. 1.
Autolytus aurantiaca : Fauvel, 1923 : 313, fig. 120 a–d.

Body 8–20 mm. long and pale orange. Prostomium rounded with three long antennae, the median being longer than the laterals. Palps visible dorsally. Pharynx S-shaped with about 16–20 subequal teeth on the trepan. Proventriculus almost globular, extending over setigers 8–10 and having about 40 rows of points. Nuchal epaulettes indistinct and small. Tentacular cirri and dorsal cirri of setiger 1 long, about equal to the median antenna. Subsequent dorsal cirri not equal to body width.

Type locality : Gulf of Naples.

Records : Not recorded from southern Africa.

Distribution : English Channel ; Mediterranean.

Autolytus pictus (Ehlers, 1864)
(fig. 12.12.o–s)

Proceraea picta Ehlers, 1864: 256, pl. 11 figs. 8–17.
Autolytus pictus: Fauvel, 1923: 315, fig. 121 a–f.

Body 10—25 mm. long with paired rectangles of red pigment dorsally which fade in alcohol (fig. 12.12.p). Prostomium rather small with three long antennae, the median exceeding the laterals. Palps not visible dorsally. Pharynx S-shaped and armed with a trepan of 20 teeth which are alternately large and small (fig. 12.12.r). Proventriculus with 50–60 rows of points. Nuchal epaulettes indistinct and do not reach setiger 2. Tentacular cirri and dorsal cirri of the first setiger much longer than subsequent ones which are not as long as the body is broad (fig. 12.12.q). Setae (fig. 12.12.o) clearly bidentate with denticulate shaft-heads.

Type locality: Adriatic Sea.

Records: Cape (33/18/i) – a doubtful specimen.

Distribution: North Atlantic from the English Channel (s) to Madeira (i) and Morocco (i, s); Mediterranean (s); Angola (i); S. W. Australia.

Autolytus maclearnus McIntosh, 1885
(fig.12.13.a–e)

Autolytus maclearnus McIntosh, 1885: 207; Ehlers, 1913: 488, pl. 33 figs. 9–11; Day, 1960: 318.

Body 6–12 mm. long, dusky anteriorly but pale otherwise. Prostomium (fig. 12.13.a) rounded with four eyes and three long wrinkled antennae. Palps just visible from above. Pharynx long and twisted, its poorly chitinised margin (fig. 12.13.b) enclosed in a sheath with 10 papillae and provided with numerous very minute and indistinct teeth. Proventriculus in setiger 4 with 25–30 rows of points. Tentacular segment with indistinct nuchal epaulettes. Dorsal tentacular cirri long and similar to antennae; ventral tentacular cirri much shorter. Dorsal cirri of setiger 1 long, but subsequent ones (fig. 12.13.e) much shorter, about one quarter body width. Setae include four to five compound bidentate forms (fig. 12.13.c) and, in posterior feet a single superior seta with a pointed tip (fig. 12.13.d).

Type locality: Kerguelen Island.

Records: Cape (33/17/s, 34/18/s, 33/27/s) – occasional specimens.

Distribution: Subantarctic (i, s), Chile, Kerguelen, Chatham Is.

Autolytus prolifer (Muller, 1788)
(fig. 12.13.f–k)

Nereis prolifera Muller, 1788: 15.
Autolytus prolifer: Fauvel, 1923: 311, fig. 119.

Body up to 15 mm. long, without an obvious colour pattern in spirit. Prostomium rounded with long antennae, the median being particularly long. Palps bent ventrally. Two pairs of eyes and a pair of ocular specks in front of them. Pharynx S-shaped and crowned with a trepan of 10 large, equal triangular teeth (fig. 12.13.f).

Proventriculus ovoid with 30–70 rows of points. Nuchal epaulettes indistinct and not extending beyond setiger 1. Tentacular cirri a little shorter than antennae. First pair of dorsal cirri considerably longer than the tentacular cirri, second pair shorter and subsequent ones (fig. 12.13.i) shorter still, averaging one third to one quarter the body width. Setae include five to six compound forms with short bidentate blades (fig. 12.13.h) and in posterior feet a single slender superior seta with a tapered tip (fig. 12.13.g). Sexual buds formed in short chains of about four and then break off and become planktonic. Male or *Polybostrichus* stage (fig. 12.13.j) with biramous palps and natatory setae from the fourth foot onwards. Female or *Saccocirrus* stage (fig. 12.13.k) without palps but with a large rounded egg sac.

Type locality: Norway.

Records: Cape (34/18/i, s, 34/22/s, 32/22/s); Natal (29/31/i) – occasional specimens.

Distribution: North Atlantic (Norway to France (i, s) and Gulf of St. Lawrence to Georgia (i, s); Madeira (s), Mediterranean.

Autolytus bondei Day, 1934

Autolytus bondei Day, 1934: 37.

Body 12 mm. long and without a pigment pattern. Prostomium rounded with four large, red-brown eyes. Median antenna rather club-shaped and about three times the prostomial length. Laterals slightly shorter. Palps bent ventrally. Pharynx long and S-shaped, and crowned with a trepan having 10 large, 10 small and 20 medium teeth in alternate series. Proventriculus large and ovoid. Anterior dorsal cirri a little longer than the lateral antennae.

Type locality: St. James, South Africa.

Records: Cape (34/18/p) – a single specimen from the plankton.

MYRIANIDA Milne-Edwards, 1841

Body elongate with a posterior chain of developing sexual buds. Pharynx long and coiled with a toothed trepan. Palps fused and bent ventrally. Three antennae. Two pairs of tentacular cirri. Dorsal cirri present throughout. Antennae, tentacular cirri and dorsal cirri never jointed and often borne on long cirrophores. No ventral cirri. Setae compound with short bidentate blades.

Type species: *Nereis pinnigera* Montagu, 1808.

Key to Species

1 Dorsal cirri in the middle of the body with broad, flattened tips. Trepan with 40–50 teeth ***M. phyllocera***

– Dorsal cirri lanceolate. Trepan with 20 teeth . . . . . ***M. pulchella***

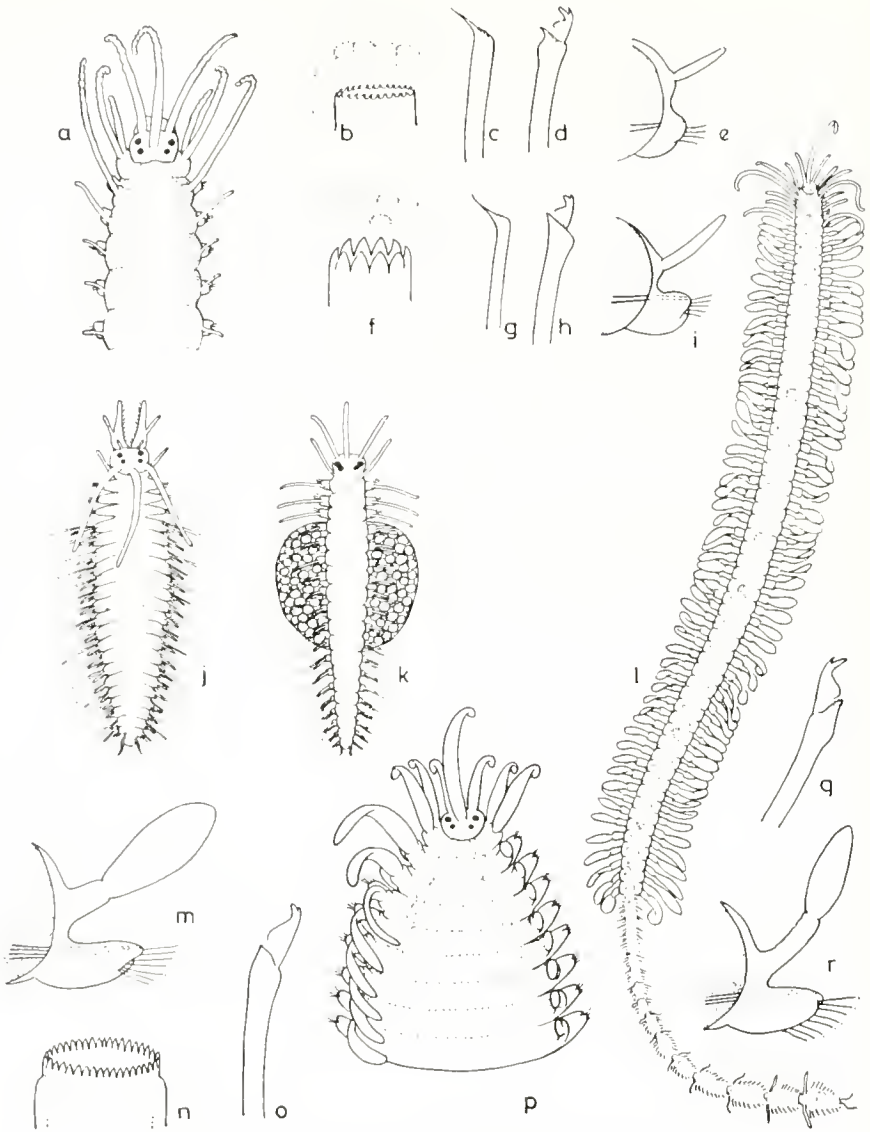

FIG. 12.13. *Autolytus maclearnus*. (A) Head. (B) Margin of pharynx. (C) Superior seta of posterior foot. (D) Normal seta. (E) Foot. *Autolytus prolifer*. (F) Margin of pharynx. (G) Superior seta of posterior foot. (H) Normal seta. (I) Foot. (J) *Polybostrichus* stage (after Fauvel). (K) *Saccocirrus* stage (after Fauvel). *Myrianida phyllocera*. (L) Entire worm (six times life size). (M) Foot. (N) Trepan. (O) Seta. *Myrianida pulchella*. (P) Anterior end. (Q) Seta. (R) Foot.

Myrianida phyllocera Augener, 1918
(fig. 12.13.l–o)

Myrianida phyllocera Augener, 1918: 301, pl. 4 figs. 87–89, text-fig. 30; Day, 1953: 421.

Body about 30 mm. long and white with orange markings when alive (fig. 12.13.l). Prostomium small, broader than long with four eyes in a trapezium, the anterior pair being the larger. Median antenna much longer than the laterals and reaches setiger 5. Pharynx long and coiled and crowned with a trepan having 40–50 teeth (fig. 12.13.n). Proventriculus extending from setiger 12–18 and has 45 rows of points. Nuchal epaulettes as prominent diverging ridges reaching back to setiger 3–5. Antennae, tentacular cirri and the first one to four pairs of dorsal cirri almost cylindrical but all later dorsal cirri flattened and lamellate with broadly rounded ends (fig. 12.13.m). Cirrophores less than half the length of the dorsal cirri. Compound setae (fig. 12.13.o) with faintly denticulate shaft-heads and tapered, bidentate blades, the secondary tooth being larger than the terminal one.

Type locality: Luderitz, South West Africa.

Records: South West Africa (26/15/s) around the Cape (34/18/i, s) to (33/25/s) – occasional specimens on rocky shores.

Distribution: Endemic.

Myrianida pulchella Day, 1953
(fig. 12.13.p–r)

Myrianida pulchella Day, 1953: 422, fig. 4 a–c.

Body 25 mm. long, coral red when alive; pale in spirit. Prostomium (fig. 12.13.p) small and rounded with two pairs of eyes. Palps fused and bent ventrally. Median antenna reaching setiger 3 and laterals a little shorter. Pharynx long, coiled and crowned with a trepan having about 20 teeth. Proventriculus extending from setiger 9–16 with 90–100 rows of points. Nuchal epaulettes in the form of prominent ridges which diverge from the rear of the prostomium and reach setiger 5. Antennae, tentacular cirri and dorsal cirri oval in section and taper to blunt tips. Dorsal cirri borne on long cirrophores which increase in length and in the middle of the body they are as long as the dorsal cirri themselves (fig. 12.13.r). Tips of dorsal cirri extend two-thirds the way across the body segments. Setigerous lobes obliquely truncate, each with a swollen postsetal lobe representing the ventral cirrus. Compound setae with bidentate blades (fig. 12.13.q), the secondary tooth being much larger than the apical one.

Type locality: St. James, South Africa.

Records: Cape (34/18/i, 34/20/i); Natal (29/31/i) – rare.

Family **SPHAERODORIDAE** Malmgren, 1867

Body small, ovoid or vermiform, rounded in section and covered with papillae. Relatively few segments. Prostomium indistinct and often retracted. Two to four eyes and four papillae simulating antennae. Pharynx unarmed and followed by a muscular gizzard. Parapodia poorly developed, uniramous and papillose. Setae simple or compound.

Records from southern Africa

Sphaerodoridium benguellarum (Day)	
as *Sphaerodorum benguellarum* Day	56Cd
Sphaerodoridium capense (Day)	
as *Sphaerodorum capense* Day	56Ci
Sphaerodorum gracile (Rathke)	
as *Ephesia gracilis* Rathke	15Cs, 50Cs

Key to Genera

1 Setae simple, hooked . . . . . ***SPHAERODORUM***
– Setae compound . . . . . ***SPHAERODORIDIUM***

SPHAERODORUM Oersted, 1843

Body ovoid or elongate. Prostomium indistinct and retractile but when extended shows two to four eyes and four elongate papillae simulating antennae. Buccal segment achaetous and not distinct from the prostomium. Pharynx unarmed and followed by a muscular gizzard. Parapodia conical and uniramous. Two or more dorsal glandular capsules per segment. Setae simple.

Type species: *Ephesia gracilis* Rathke, 1843.

Sphaerodorum gracile (Rathke, 1843)
(fig. 13.1.a–d)

Ephesia gracilis Rathke, 1843: 176; Fauvel, 1923: 377, fig. 148 a–f.

Body (fig. 13.1.a) vermiform, up to 35 mm. long. Prostomium (fig. 13.1.b) when extended rather square in front with two pairs of longer papillae simulating antennae as well as numerous smaller ones. Four subdermal eyes. Buccal segment achaetous with rudimentary parapodial lobes and globular dorsal cirri. Mouth ventral. Body segments each with four transverse rows of minute papillae and an enlarged papilla above the setigerous lobe representing the dorsal cirrus (fig. 13.1.c). A smaller papilla representing the ventral cirrus. Setigerous lobe conical and papillose. Setae (fig. 13.1.d) all short and simple, each with a subterminal swelling and a falciform tip.

Type locality : Norway.

Records : South West Africa (26/15/s) ; Cape (from 32/18/s to 33/27/s) – common in dredgings.

Distribution : Arctic ; temperate North and South Atlantic (s, d) ; Subantarctic (d) ; Antarctic (d) ; Bering Sea to Southern California ; N. Japan.

SPHAERODORIDIUM Lützen, 1961

Body elongated or short and oval. Two or more rows of spherical glandular capsules per segment. Prostomium indistinct and retractile. Buccal segment not distinct. Pharynx unarmed and followed by a muscular gizzard. Parapodia conical and uniramous. Dorsal and ventral cirri represented by papillae. Setae compound and falcigerous.

Type species : *Sphaerodorum claparedii* Greeff, 1866.

Key to Species

1 Setae obviously compound with long blades (fig. 13.1.e) . . . . ***S. benguellarum***
– Setae obscurely compound with short, broad blades (fig. 13.1.i) . . . . ***S. capense***

Sphaerodoridium capense (Day, 1963)
(fig. 13.1.h–i)

Sphaerodorum capense Day, 1963a : 407, fig. 7 d–f.

Body ovoid, 2·5 mm. long with 16 setigers. Head retractile and appendages unknown. One pair of eyes. Body covered with larger and smaller papillae arranged in two rows per segment. Anterior row with 18 larger papillae across the dorsum and the posterior irregular row of very numerous small papillae. Papillae above the parapodia not obviously enlarged. Parapodia (fig. 13.1.h) wrinkled and retractile with an ovoid terminal papilla and about ten similar compound setae. Setal blade (fig. 13.1.i) broadly tringaular, unidentate and incompletely fused to expanded shaft-head.

Type locality : Cape Peninsula, South Africa.

Records : Cape (34/8/i) – a single specimen known.

Sphaerodoridium benguellarum (Day, 1963)
(fig. 13.1.e–g)

Sphaerodorum benguellarum Day, 1963a : 407, fig. 7 a–c.

Body (fig. 13.1.g) ovoid, 2·2 mm. long with 24 setigers. Head retractile and appendages unknown. One pair of eyes. Body covered with larger and smaller papillae in irregular rows across the dorsum. Papillae above parapodia not larger than the others. Parapodia (fig. 13.1.f) wrinkled and retractile with a larger presetal

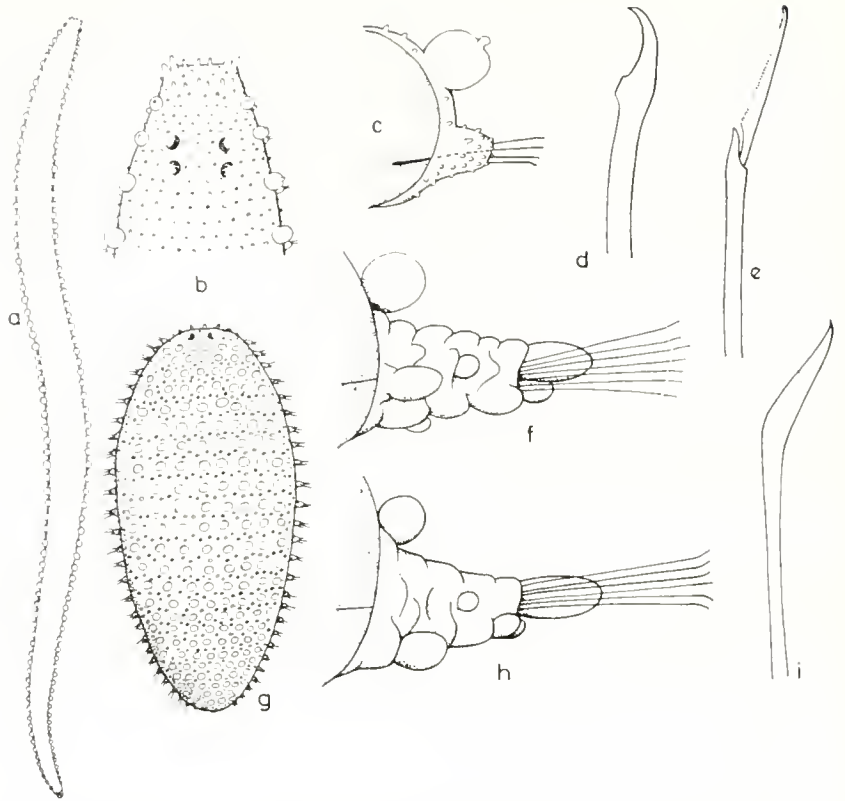

FIG. 13.1. *Sphaerodorum gracile*. (A) Entire worm (five times life size). (B) Head (after Fauvel) (C) Parapodium. (D) Seta. *Sphaerodoridium benguellarum*. (E) Seta. (F) Parapodium. (G) Entire worm (25 times life size). *Sphaerodoridium capense*. (H) Parapodium. (I) Seta.

papilla and two smaller postsetal ones. About 12 setae per parapodium each obviously compound with a sword-shaped, falcigerous blade whose tip is probably unidentate (fig. 13.1.e).

TYPE LOCALITY : 170 metres off Lamberts Bay, South Africa.

RECORDS : Cape (32/18/d) – a single specimen known.

Family **NEREIDAE** Johnston, 1865

Body elongate with numerous segments. Head with a distinct prostomium and peristomium. Prostomium with two pairs of eyes, 0–2 frontal antennae and two large, biarticulate palps. Peristome usually apodous and bears four (or occasionally three) pairs of tentacular cirri. Proboscis with a pair of toothed jaws and often numerous chitinous paragnaths or soft papillae. Parapodia usually biramous after the first two. Gills seldom present. Notopodium with a dorsal cirrus and one to three lobes. Neuropodium with two lobes and a ventral cirrus. Setae mainly compound and usually include both spinigers and falcigers.

Records from southern Africa

Ceratonereis costae (Grube)	27Mi, 45Pi
Ceratonereis ehlersiana Claparède	27Mi
Ceratonereis erythraeensis Fauvel	27Mi, 36Ni, 40Ni, 41Ci
Ceratonereis hircinicola Eisig	—Ms, Ne
Ceratonereis keiskama Day	41Ce, 45Ne
Ceratonereis mirabilis Kinberg	27Mi, 28Mi, 45Pe
Ceratonereis pachychaeta Fauvel	27Mi
Dendronereis arborifera Peters	1Pi, 27Mi, 40Pe, Ne, 41Ce
Dendronereides zululandica Day	40Ne
Laeonereis ankyloseta Day	45Pi, Ni, 50Cs
Leonnates decipiens Fauvel	45Pi
Leonnates jousseaumei Gravier	—Ms
Micronereides capensis Day	
Namalycastis indica (Southern)	
as *Lycastis indica* Southern	40Ni
Namanereis quadraticeps (Blanchard)	
as *Lycastis quadraticeps* Blanchard	26Wi, 41Ci
Nereis (*Neanthes*) *agnesiae* Augener	26Wi
Nereis (*Neanthes*) *caudata* (Della Chiaje)	41Ci, 50Cs
Nereis (*Neanthes*) *agulhana* Day	56Csd
as *Nereis* (*Neanthes*) cf. *kerguelensis* McIntosh	50Csd
Nereis (*Neanthes*) *indica* Kinberg var. *brunnea* Day	45Pi
Nereis (*Neanthes*) *mossambica* Day	45Pi
Nereis (*Neanthes*) *operta* Stimpson	25Ci, 32Pi, 36Ni, Ci, 40Ni, 41Ci, 50Cs
as *Nereis polyodonta* Schmarda	4Ci, 26Wis
as *Mastigonereis operta* (Stimpson)	12Ci
as *Mastigonereis latipalpa* Schmarda	4Ci
Nereis (*Neanthes*) *papillosa* Day	55Ca
Nereis (*Neanthes*) *succinea* Frey & Leuckart	41Ci, 45Ni, 50Cs
as *Nereis glandulosa* Ehlers	15Cs

Nereis (*Neanthes*) *unifasciata* Willey . . . 45Pi
Nereis (*Neanthes*) *willeyi* Day 36Ci, 40Ni, 41Ni, 45Pi, 50Cs
as *Nereis* (*Neanthes*) *capensis* Willey . . 12Ci
as *Nereis callaona* (non Grube) . . . 33Ci
? as *Nereis splendida* (non Grube) . . 21Ci
Nereis (*Nereis*) *coutierei* Gravier . . . 40Ni
Nereis (*Nereis*) *eugeniae* (Kinberg) . . . 50Cd
Nereis (*Nereis*) *falcaria* (Willey) . . . 41Ci, 45Pi
as *Nereis kauderni* Fauvel 28Mi
Nereis (*Nereis*) *falsa* Quatrefages . . . 27Mi, 40Ni, 50Cs
as *Nereis callaoana* (non Grube) . . . 26Wis
? as *Nereis lucipeta* Ehlers 15As
Nereis (*Nereis*) *jacksoni* Kinberg . . . 45Pi, 50Cs
Nereis (*Nereis*) *granulata* Day 45Pi
Nereis (*Nereis*) *lamellosa* Ehlers . . . 50Cs
Nereis (*Nereis*) *pelagica* Linn 22Cis, 39Ai
Nereis (*Nereis*) *persica* Fauvel . . . .
as *Nereis zonata* var. *persica* Fauvel . . 45Pi, 50Cs
Nereis (*Nereis*) *gilchristi* sp. nov. . . .
as *Nereis* (*Nereis*) sp. 50Cs
Nereis (*Nereis*) *trifasciata* Grube . . . 45Pi
as *Nereis unifasciata* (non Willey) . . 27Mi, 28Mi
Perinereis capensis (Kinberg) 35Ci, 36Ni, 40Ni, 41Ci, 50Cs
as *Arete capensis* Kinberg 3Ci
Perinereis cultrifera (Grube) 27Mi, 36Ci, 40Ni, 41Ci
Perinereis cultrifera var. *helleri* Grube . . 40Ni
Perinereis falsovariegata Monro . . . 35Ci, 36Ni, 40Ni, 41Ci, 45Pi
Perinereis nigropunctata (Horst) . . . 45Pi
Perinereis nuntia vallata (Grube) . . . 27Mi, 36Ci, 41Ci, 45Pi
as *Nereis latipalpa* Schmarda . . . 4Ci
as *Neanthes latipalpa typica* (Schmarda) . . 12Ci
as *Nereis vallata* Grube 11Wi, 16Wi
as *Perinereis vallata* (Grube) . . . 26Wi
Perinereis nuntia var. *majungaensis* Fauvel . . 28Mi
Perinereis vancaurica (Ehlers) 45Pi
Platynereis australis (Schmarda) . . . 22Cis, 41Ci, 50Cs
Platynereis calodonta Kinberg 3Ci, 41Ci, 50Cs
as *Platynereis hewitti* Day 36Ci, 40Ni

Platynereis dumerilii (Audouin & Milne Edwards)	26Wis, 27Mi, 28Mi, 33Cs, 36Ni, Ci, 40Ni, 41Ci, 50Cs
as *Eunereis africana* Treadwell . . .	39Ai
as *Nereis dumerilii* Audouin & Milne Edwards	21Ci
? as *Mastigonereis quadridentata* Schmarda .	4Ci
Platynereis isolita Gravier	45Pi, —Ms
Platynereis tongatabuensis (McIntosh) . .	
as *Nereis tongatabuensis* McIntosh . .	39Ai
Pseudonereis anomala Gravier	28Mi
Pseudonereis variegata (Grube) . . .	28Mi, 40Ni, 41Ci, Wi, 50Cs
as *Nereis* (*Nereilepas*) *stimpsonis* (Grube) .	8Ci, 9Ci
? as *Nereis mendax* Stimpson . . .	2Ci
as *Nereis podocirra* Schmarda . . .	4Ci
as *Perinereis variegata* Grube . . .	25Ci, 36Ni, Ci
as *Perinereis mendax* (Stimpson) . . .	12Ci
as *Nereis* (*Mastigonereis*) *variegata* Grube .	13Ci
as *Perinereis diversidentata* Treadwell . .	39Wi
Unanereis macgregori Day	53Mi

Incerte sedis

Nereis fusifera Quatrefages	6Ci
Mastigonereis striata (non Schmarda) . .	32Pi

BIOLOGICAL NOTES

Although nereids are essentially similar in structure, they differ greatly in their habits. Most of them live on rocky shores and creep about under stones and forage actively among sea-weeds, barnacles, ascidians and other sedentary animals for they are essentially omnivorous. Many others however burrow in sandy mud. *Ceratonereis erythraensis*, for example, burrows in sheltered sandbanks; *Dendronereis arborifera* lives in the black mud of mangrove swamps; *Namanereis quadraticeps* lives at the very top of the shore in damp crevices where it associates with terrestrial animals such as staphilinid beetles and small centipedes; *Ceratonereis keiskama* and the North Atlantic *Nereis diversicolor* live in waters of low salinity near the heads of estuaries and both tunnel in stiff mud. *Cheilonereis* is a commensal with hermit crabs. *Platynereis dumerilii* makes slime tubes on sea-weeds. *Nereis eugeniae* lives in muddy sand near the edge of the continental shelf and *Nereis papillosa* is abyssal. The last two species, however, are exceptional as the great majority of nereids are intertidal or restricted to very shallow water.

Undoubtedly many nereids are omnivorous. *Pseudonereis variegata* one of the commonest nereids on South African shores, has a varied diet and its gut may contain the appendages of amphipods, setae of other polychaetes and large pieces of algae obviously bitten off with its jaws. *Platynereis dumerilii* seems to feed mainly on epiphytic algae and uses its comb-like paragnaths much as a snail uses its radula.

Dendronereis is largely a detritus feeder while *Nereis diversicolor* is said to supplement its diet by straining plankton through mucus nets which it makes at the mouth of its burrow.

The anatomical changes leading to the sexual heteronereid phase will be described later. Enormous numbers of worms take part in sexual swarming on calm nights in southern seas; even penguins feed on *Platynereis dumerilii* on summer nights and in the U.S.A. *Nereis succinea* forms windrows inches thick on the shores of lagoons when they die after spawning.

THE MAIN DIAGNOSTIC CHARACTERS

Important discussions of the family Nereidae will be found in Fauvel (1923) and Hartman (1954a). For most genera the useful characters are the shape and distribution of the paragnaths or soft papillae on the proboscis, the number of lobes in the anterior notopodia, the shape of the dorsal lobe of posterior notopodia and the distribution and nature of the setae in posterior feet.

Head structures. Apart from *Micronereis* which has no antennae, and the recently discovered genus *Unanereis* which has a single antenna, all genera have two anterior *antennae*, and a pair of two-jointed *palps*. The *prostomium* varies somewhat in shape and is occasionally incised between the antennae. The *peristomium* is seldom important except in aberrant genera such as *Cheilonereis* where it is prolonged forwards to encompass the prostomium and develops papillae or frilly lobes ventrally. The length of the *tentacular cirri* though often quoted is not a reliable character. The armature of the *proboscis* is extremely important and if it is not everted before death it must be dissected by a longitudinal ventral incision from the mouth opening back to the fourth setiger. The two sides are then forced apart so that the whole of the buccal cavity back to the insertion of the *toothed jaws* is visible. The jaws themselves are not important but the nature and arrangement of the soft papillae and/or *chitinous paragnaths* is characteristic for each species, though the exact number of paragnaths is not. A normally everted proboscis (fig. 14.1) is divided into two rings by a transverse groove or constriction. There is a *basal or oral ring* forming the mouth opening and lips and a *maxillary or distal ring* where the *jaws or maxillae* are inserted. Each ring is subdivided by longitudinal grooves into a number of prominences or *areas*. By convention each area is given a Roman number.

On the maxillary ring:

Area or group I is dorsal and median.
Area or group II is dorsal and lateral.
Area or group III is ventral and median.
Area or group IV is ventral and lateral.

On the oral or basal ring:

Area or group V is dorsal and median.
Area or group VI is dorsal and lateral.
Area or group VII is ventral and median.
Area or group VIII is ventral and lateral.

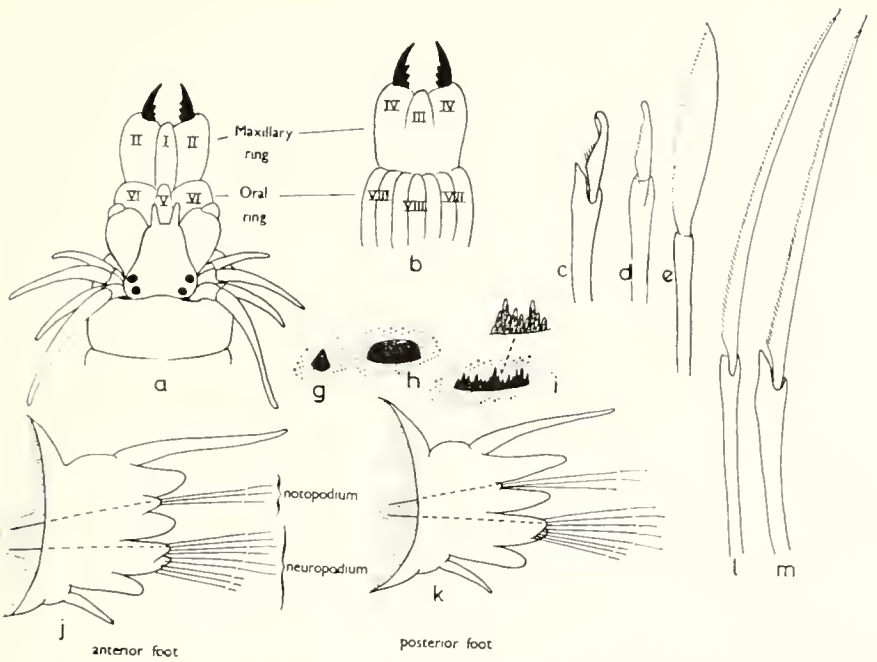

FIG. 14.1. *Taxonomic terms used in Nereidae.* (A) Dorsal view of head with extruded proboscis. (B) Ventral view of proboscis. (C) Heterogomph falciger. (D) Homogomph falciger. (E) Natatory seta. (G) Conical paragnath or point. (H) Bar-shaped paragnath. (I) Comb-like paragnath. (J) Anterior foot. (K) Posterior foot. (L) Homogomph spiniger. (M) Heterogomph spiniger.

In actual fact areas VII and VIII are usually in the form of several longitudinal ridges on the sides and ventral surface of the oral ring but when the proboscis is everted the ridges are flattened and the grooves disappear and for this reason groups VII and VIII are described together as one continuous area. The most important areas are I, V, VI and VII + VIII.

Soft papillae or chitinous paragnaths may be entirely absent so that the proboscis is quite featureless apart from irregularities due to contraction. Usually *soft papillae* or paragnaths are present on some or all of the areas. The *chitinous paragnaths* (also called *denticles*) vary in shape from simple *conical points* (fig. 14.1.g) to smooth *transverse bars* (fig. 14.1.h) (confined to area VI) or *pectinate* (comb-like) bars (fig. 14.1.i). The number of paragnaths on each area is reasonably constant for each species; thus area (or group) I may have 0–1 or 1–3 and group VI may have a ring or rosette of 4–8. The exact number of points on VII + VIII is only important if there is only a single row and even here variations from four to eight are expected. Usually VII + VIII has two to three irregular rows of larger and smaller points or even a broad band of numerous points.

Parapodia. In most genera except *Micronereis* and *Micronereides* the first segment behind the head is apodous. In *Namanereis* all the parapodia are uniramous since the setigerous lobe of the notopodium is absent or vestigial. In other genera the first two feet are uniramous and the rest biramous. When fully developed the parapodium consists of five *lobes* or *ligules* plus a *dorsal* and a *ventral cirrus*. The *notopodium* (fig. 14.1.j) consists of the dorsal cirrus and three lobes, namely the superior lobe, the setigerous lobe and the inferior lobe. The setigerous lobe of the notopodium is, however, seldom developed in posterior feet and may even be absent in anterior feet which is thus reduced to two notopodial lobes. The neuropodium consists of two lobes – a setigerous lobe on which pre- and postsetal lips may be prominent, an inferior lobe and the ventral cirrus. Important points to note are the number of notopodial lobes in anterior feet, the origin of the dorsal cirrus and its length relative to the superior lobe of the notopodium and modifications of the latter in posterior feet.

Gills or branchiae. Specialised gills are seldom found except in genera which inhabit de-oxygenated environments such as mangrove swamps. *Dendronereis* develops a gill by the formation of vascular outgrowths from the dorsal cirrus and *Dendronereides* develops vascular outgrowths from the notopodial lobes.

Setae. The setae are characteristically compound and simple setae are rare. These are usually modifications of compound setae either by the loss of the blade or the fusion of the blade to the shaft-head. The compound setae are of four basic types according to the symmetry of the shaft-head and the tapering of the blade. As shown in figures 14.1.c, d, e, l, m, a compound seta may be either *homogomph* (fig. 1.c.l) and have a symmetrical shaft-head or *heterogomph* (fig. 14.1.d, m) and have the shaft-head produced on one side. The blade may be *falcigerous* (fig. 14.1.c, d) by which is meant that it is typically short and stout with a hooked end often attached back by a *tendon* or it may be *spinigerous* (fig. 14.1.l, m) and taper slowly to a fine tip. Some genera have spinigerous setae only but most have falcigers as well. The presence or absence of homogomph falcigerous setae in the posterior notopodia is important, also the exact structure of the blade. These notopodial falcigers are easily lost and several feet should be examined towards the end of the body to determine whether they really are absent in species of *Nereis*.

Reproduction. As the sex cells mature, the body changes and the worm develops into the *heteronereid* phase. The eyes become enlarged, the setae and parapodia in the middle of the body become modified for swimming and the worm then leaves the bottom and swims to the surface at night discharging the eggs and sperm. The most obvious changes are the development of long natatory setae (fig. 14.1.e) with broad paddle-shaped blades, the appearance of lamellar expansions on the parapodial lobes and the bases of the cirri and occasionally the appearance of notches along the length of the dorsal cirrus. Worms in the heteroneid phase are difficult to identify as the *notopodial falcigers* may disappear but it is claimed that the position of the first foot is of specific value. Incidentally it is not certain that all species do undergo a *heteronereid* phase.

Colour. In fresh specimens the pattern on the head or back provides a rapid method of preliminary sorting but unfortunately most of the markings fade rapidly on preservation.

General. The Nereids are a well defined group and most of them have been well described. The standard procedure for identification should be:

(*a*) Note any obvious colour pattern.
(*b*) Check any special features on the head.
(*c*) Dissect the proboscis and write out the formula.
(*d*) Remove one or two anterior feet (e.g. the 10th–12th) note gradual changes along the body and remove one or two posterior feet which have intact setae.
(*e*) Mount the feet on a slide and examine the setae.

Key to Genera

1 No anterior apodous segment behind the peristomium. Paragnaths absent (fig. 14.2.a) 2
– anterior apodous segment present. Paragnaths present or absent (fig. 14.3.b) . . 3
2 Antennae absent. . . . . *MICRONEREIS**
– Two antennae present . . . . . *MICRONEREIDES* (p. 298)
3 One antenna present (fig. 14.2.g). Parapodia biramous after the first two. Paragnaths on maxillary ring only . . . . . *UNANEREIS* (p. 298)
– Two antennae present. 4
4 Parapodia uniramous throughout. (Paragnaths absent) 5
– Parapodia biramous after the first two 6
5 Notopodial lobe and cirrus always short . . . . *NAMANEREIS* (p. 299)
– Notopodial lobe and cirrus elongated posteriorly . . . *NAMALYCASTIS* (p. 301)
6 Branched gills present (fig. 14.3.a) 7
– Branched gills absent 8
7 Gills arise from the dorsal cirrus and are regularly bipinnate (fig. 14.3.d) *DENDRONEREIS* (p. 301)
– Gills arise from the notopodial lobes and are pinnately branched (fig. 14.3.j) *DENDRONEREIDES* (p. 302)
8 Chitinous paragnaths entirely absent 9
– Chitinous paragnaths present 12
9 Proboscis with fleshy papillae (fig. 14.11.k.l) 10
– Proboscis without fleshy papillae. Superior lobe of notopodium expanded in posterior feet . . . . . *LEPTONEREIS** (p. 305)
10 Fleshy papillae on both rings of the proboscis 11
– Fleshy papillae on the maxillary ring only. Transverse rows of papillae on the ventra of anterior segments. . . . . *AUSTRALONEREIS**
– Fleshy papillae on the oral ring only . . . . . *LAEONEREIS* (p. 303)
11 All setae are homogomph spinigers . . . . . *TYLONEREIS**
— Setae include both spinigers and falcigers. Ventral cirri double from the third foot onwards. . . . . *CERATOCEPHALE**
12 Paragnaths all separate and conical (fig. 14.1.g) 13
— Paragnaths of group VI are transverse bars (fig. 14.1.h) 14
— Paragnaths are pectinate bars (fig. 14.1.i) . . . . . *PLATYNEREIS* (p. 305)
13 Chitinous paragnaths present on some or all groups of both the basal and maxillary rings *NEREIS* (p. 307)
— Chitinous paragnaths present on the basal ring only . . . *EUNEREIS** (p. 323)
— Chitinous paragnaths present on the maxillary ring only 14

14 Basal ring of proboscis smooth. Setae normal . . . ***CERATONEREIS*** (p. 324)
— Basal ring of proboscis usually with soft papillae. Falcigers with saw-edged blades (fig. 14.11.c) . . . . . ***LEONNATES*** (p. 328)
15 Superior lobe of posterior notopodia expanded (fig. 14.12.f) . ***PSEUDONEREIS*** (p. 331)
— Superior lobe of posterior notopodia not expanded . . . ***PERINEREIS*** (p. 333)

MICRONEREIDES Day, 1963

Small Nereidae generally similar to *Micronereis* but possessing two antennae. Proboscis without paragnaths but with a pair of toothed jaws. Prostomium with a pair of antennae and a pair of biarticulate palps. Two pairs of tentacular cirri. No apodous segment behind the peristome. First two segments uniramous, subsequent ones biramous. Setae are all homogomph spinigers.

Type species: *Micronereides capensis* Day, 1963.

Micronereides capensis Day, 1963
(fig. 14.2.a–c)

Micronereides capensis Day, 1963a: 404, fig. 6 a–e.

A small species about 6 mm. long with 30–40 segments. No colour pattern. Prostomium (fig. 14.2.a) broad, roughly square with eyes indistinct or absent. A pair of widely separated antennae. Palps with stout palpophores completely fused to the prostomium and slender palpostyles longer than the antennae. Proboscis without paragnaths but with a pair of large jaws with seven teeth. Two pairs of short tentacular cirri arranged 2 : 2 showing that they have been derived from two fused segments. No anterior apodous segment. The first two setigerous segments uniramous, the notopodial lobes and notosetae being absent though the dorsal cirrus remains. Subsequent segments with biramous parapodia which are similar in structure throughout. Pygidium unknown. Normal parapodia (fig. 14.2.h) deeply cleft between the notopodia and neuropodia. Dorsal cirrus rather short, superior lobe of notopodium absent. Inferior lobe of notopodium elongated and exceeds the dorsal cirrus; no intermediate (setigerous) lobe. Neuropodium with a stout conical setigerous lobe, a very small inferior lobe and a small ventral cirrus.

The setae (fig. 14.2.c) are all homogomph spinigers though the inferior series of the neuropodia have rather short blades and the shaft-heads might be considered hemigomph.

Type locality: Agulhas Bank, South Africa.

Records: Cape (26 21 d) – a single specimen known.

UNANEREIS Day, 1962

Prostomium with a single median antenna and two biarticulate palps. Two pairs of eyes. Peristome with four pairs of tentacular cirri but no parapodia or setae. Proboscis without chitinous paragnaths on the basal ring but with conical paragnaths

and a pair of toothed jaws on the maxillary ring. The first two pairs of parapodia uniramous but the rest biramous. Setae include both spinigers and falcigers.

TYPE SPECIES: *Unanereis macgregori* Day, 1962.

Unanereis macgregori Day, 1962
(fig. 14.2.e–k)

Unanereis macgregori Day, 1962: 637, fig. 3 a–g.

Length about 60 mm. for 120 segments. Prostomium (fig. 14.2.g) roughly oval. A single slender median antenna between a pair of long palps. Tentacular cirri very long and slender. Proboscis with group I = 0, II = 12, III = 5, IV = 12, V = 0, VI = a broad fleshy lobe, VII + VIII = 0. Anterior parapodia (fig. 14.2.j) with two notopodial lobes and a very long dorsal cirrus. Setigerous lobe of neuropodium with a long presetal lip. Posterior parapodia (fig. 14.2.k) with the superior lobe of the notopodium acting as the cirrophore of the dorsal cirrus and the inferior lobe of the neuropodium reduced to a ventral papilla on the setigerous lobe. Anterior setae include heterogomph and homogomph spinigers and heterogomph falcigers with long blades. Posterior notosetae include homogomph spinigers and hemigomph falcigers (fig. 14.2.h) with bidentate apices. Posterior neurosetae include homogomph and heterogomph spinigers and heterogomph falcigers (fig. 14.2.i) with blades similar to those in the notopodia.

TYPE LOCALITY: Diego Suarez, Madagascar.

RECORDS: Madagascar (i) – a single specimen known.

NAMANEREIS Chamberlin, 1919

Prostomium with two antennae and two biarticulate palps. Peristome with three or four* pairs of tentacular cirri but without parapodia. Proboscis without chitinous paragnaths but sometimes with soft papillae. Parapodia sesquiramous throughout, the setigerous notopodial lobe being absent though the notopodial aciculum remains and sometimes one to two setae. Dorsal cirrus and superior lobe of notopodium always short. Neuropodia with two bundles of setae, the superior ones being spinigerous and the inferior ones falcigerous.

TYPE SPECIES: *Lycastis quadraticeps* Blanchard, 1849.

Namanereis quadraticeps (Blanchard, 1849)
(fig. 14.2.l–o)

Lycastis quadraticeps Blanchard, 1849: 25; Augener, 1918: 214, pl. 2 fig. 35, pl. 3 fig. 68, text-fig. 17.

A slender yellowish species about 25 mm. long with 70 segments. Prostomium (fig. 14.2.l) about as broad as long with small antennae and short, broad palps. Four pairs of short tentacular cirri. Proboscis without chitinous paragnaths or soft papillae. Parapodia (fig. 14.2.m) almost uniramous each with a small dorsal cirrus shorter than the setigerous lobe and about as long as the slender ventral cirrus.

* Hartman (1959a) in a recent review of the genus states that it has three pairs of tentacular cirri. Chamberlin infers that there are four and this is certainly the case in *N. quadraticeps* from Southern Africa.

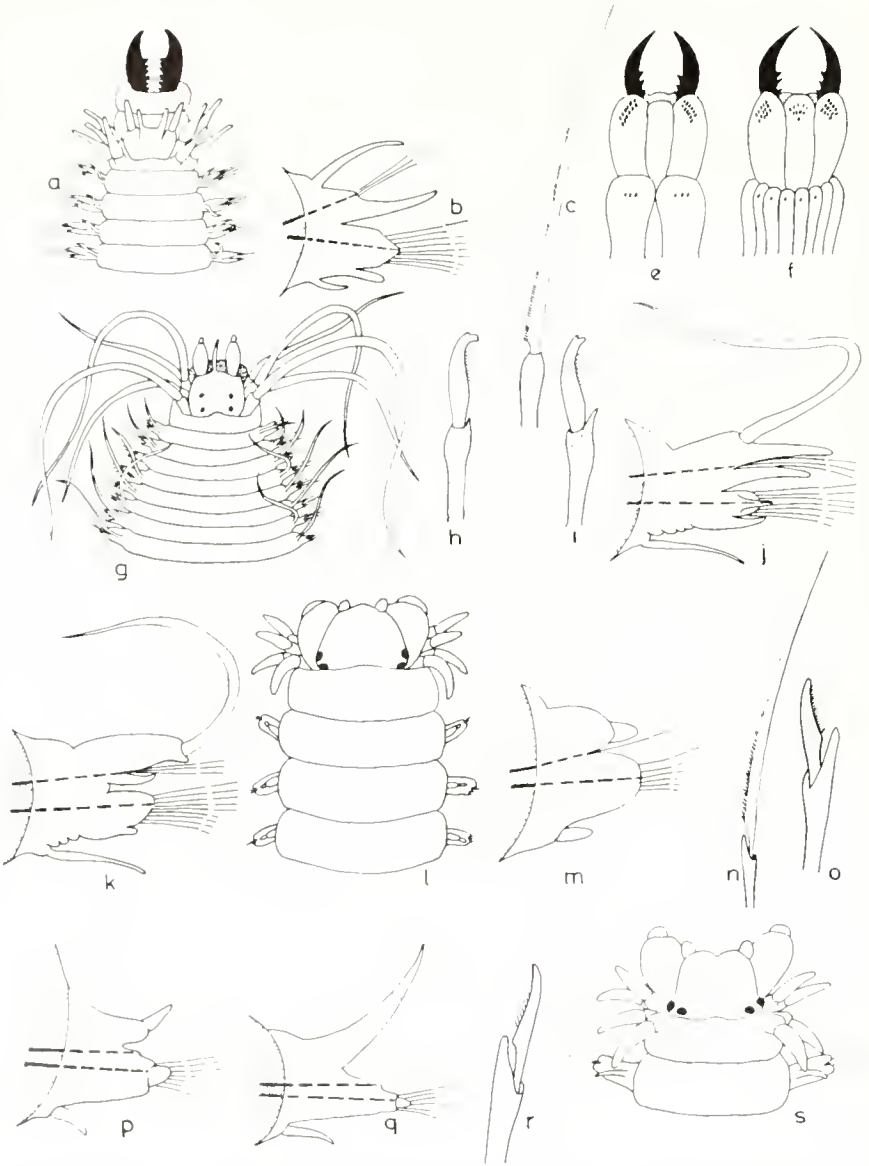

FIG. 14.2. *Micronereides capensis*. (A) Head with proboscis extruded. (B) Middle foot. (C) Homogomph spiniger. *Unanereis macgregori*. (E, F) Dorsal and ventral views of proboscis. (I) Anterior end. (H) Notopodial falciger. (I) Neuropodial falciger. (J) Anterior foot. (K) Posterior foot. *Namanereis quadraticeps*. (L) Head. (M) Eighteenth foot. (N) Heterogomph spiniger. (O) Heterogomph falciger. *Namalycastis indica*. (P) Anterior foot. (Q) Posterior foot. (R) Falciger. (S) Head.

Notosetae represented by an aciculum and one to three heterogomph spinigers. Neurosetae include one to two spinigers (fig. 14.2.n) and several heterogomph falcigers (fig. 14.2.o) with coarsely toothed blades.

TYPE LOCALITY: Chiloe, Chile.

RECORDS: South West Africa (26/15/i) to the Cape (33/18/i); a few specimens under stones on the shore.

DISTRIBUTION: Southern California (i); North Carolina (e); Senegal (s) – doubtful; Chile (e, i); Magellan area (i); New Zealand (i); Japan.

NAMALYCASTIS Hartman, 1959

Prostomium with two antennae and two biarticulate palps. Peristome with four pairs of tentacular cirri, arranged 2 : 2. Proboscis without chitinous paragnaths or soft papillae. Parapodia uniramous or sesquiramous, the notopodium being reduced to an aciculum and sometimes one or two notosetae. Dorsal cirrus fused to the end of the dorsal lobe which is often enlarged in posterior feet. Neuropodium with a single lobe bearing both spinigerous and falcigerous setae.

TYPE SPECIES: *Paranereis abiuma* Müller [*in*] Grube, 1871.

Namalycastis indica (Southern, 1921)
(fig. 14.2.p–s)

Lycastis indica Southern, 1921 : 578, pl. 19 fig. 2.

Length up to 30 mm. for 200 segments. Prostomium (fig. 14.2.s) quadrangular and grooved though not incised between the widely separated antennae. Proboscis with neither papillae nor paragnaths. Palps short and stout. Peristome with four short tentacular cirri arranged 2 : 2. Anterior feet (fig. 14.2.p) with a dorsal cirrus representing the superior lobe with the true dorsal cirrus fused to its end, a single setigerous lobe with two acicula and one bundle of setae and a small ventral cirrus. Dorsal cirri elongate and rather flattened in posterior feet (fig. 14.2.q). Notopodial setae usually absent, though one to two spinigers may be present here and there. Neuropodial falcigers (fig. 14.2.r) with very long, straight, blunt blades.

TYPE LOCALITY: Chilka Lake, India.

RECORDS: Natal (29/31/e, 28/32/e) to Mocambique (23/35/e) – a few specimens in muddy sand of estuaries.

DISTRIBUTION: India (e); Macassar (e); Andamans (e).

DENDRONEREIS Peters, 1854

Prostomium deeply cleft between the two antennae. Two biarticulate palps. Peristome with four pairs of tentacular cirri but no parapodia. Proboscis without chitinous paragnaths but sometimes with soft papillae. The first two parapodia

uniramous, the rest biramous. The dorsal cirri of a number of middle feet bear pinnate gills. Neuropodia of several anterior feet multifid but posterior feet with reduced parapodial lobes. The setae are all homogomph spinigers.

Type species: *Dendronereis arborifera* Peters, 1854.

Dendronereis arborifera Peters, 1854
(fig. 14.3.a–f)

Dendronereis arborifera Peters, 1854: 612; Fauvel, 1919: 399, pl. 15 figs. 5–8.

Body (fig. 14.3.a) slender, up to 85 mm. long. Colour pale with red gills when alive. Prostomium (fig. 14.3.b) deeply cleft between the antennae. Palps short, and fused to the divided prostomium. Tentacular cirri vaguely jointed distally. Proboscis without paragnaths or soft papillae. Anterior feet (fig. 14.3.c) with a simple tapered dorsal cirrus. Notopodium with three lobes. Neuropodium with four postsetal lobes and later one or two presetal ones. Ventral cirrus short. Bipinnately arranged branchial filaments appear on the dorsal cirri from about the 12th foot and continue to the 24th foot. Branchiferous feet (fig. 14.3.d) with a three-lobed notopodium; setigerous lobe of neuropodium subdivided to form six or later four lobes. Posterior feet (fig. 14.3.f) simplified, each with a slender dorsal cirrus, a bilabiate notopodium, a conical bilabiate neuropodium and a ventral cirrus. Setae are all homogomph spinigers (fig. 14.3.e), those of the neuropodium having shorter blades.

Type locality: Mocambique.

Records: Eastern Cape (33°27′E) and Natal (28°32′E) to Mocambique (25°35′E) – common in black mud among mangroves.

Distribution: Mocambique (e); Madagascar (e).

DENDRONEREIDES Southern, 1921

Prostomium with two antennae. Peristome without parapodia. Proboscis without chitinous paragnaths but with soft papillae on both basal and maxillary rings. Parapodia biramous after the first two. In the anterior region the superior lobe of the notopodium is divided to form a simple series of branchial filaments. Inferior lobe of neuropodium absent. Feet reduced and simplified posteriorly.

Type species: *Dendronereides heteropoda* Southern, 1921.

Dendronereides zululandica Day, 1951
(fig. 14.3.g–l)

Dendronereides zululandica Day, 1951: 30, fig. 5 a–j.

Length about 70 mm. by 1·5 mm. for 100 segments. Prostomium (fig. 14.3.g) slightly grooved between the two antennae. Peristome without parapodia but cirrophores large. Tentacular cirri short and arranged so as to suggest dorsal and ventral cirri of two partially fused segments. Proboscis (fig. 14.3.h, i) with a few

large low papillae on the basal ring and many small soft papillae on the maxillary ring. Anterior feet (3rd to 7th) with at first two and later three notopodial lobes and a dorsal cirrus of the same length. Neuropodium with a single broad setigerous lobe, no inferior lobe and a very short ventral cirrus. Branchiae (fig. 14.3.j) from the 8th to 30th foot, formed by four pinnate divisions of the superior lobe of the notopodium. Posterior feet (fig. 14.3.k) with reduced and simplified parapodial lobes; the notopodial lobes being reduced to two and then one, and the neuropodium to a single conical lobe. Notosetae are all homogomph spinigers. Neurosetae include both spinigers and falcigers (fig. 14.3.l) with straight, blunt blades.

TYPE LOCALITY: St. Lucia, Zululand.

RECORDS: Natal (28/32/e) and Mocambique (26/32/e) – locally common in mud of tropical estuaries.

DISTRIBUTION: Endemic.

LAEONEREIS Hartman, 1945

Prostomium with two antennae. Peristome without parapodia. Proboscis without chitinous paragnaths but with fleshy papillae on the oral ring. Parapodia biramous except for the first two. In posterior feet the superior lobe of the notopodium is not expanded and lamellar. Setae include both spinigers and falcigers.

TYPE SPECIES: *Nereis culveri* Webster, 1879.

Laeonereis ankyloseta Day, 1957*
(fig. 14.3.m–t)

Laeonereis ankyloseta Day, 1957: 83, fig. 5 a–j.

Body up to 50 mm. long with a pattern of brown spots on anterior segments. Prostomium (fig. 14.3.o) as broad as long with a median groove. Tentacular cirri short. Proboscis (fig. 14.3.m, n) with a large soft transverse lobe on VI and row of six soft papillae on VII and VIII. Maxillary ring smooth. Anterior feet (fig. 14.3.p) with three notopodial lobes and a slightly longer dorsal cirrus. In posterior feet (fig. 14.3.q) the notopodium still has three lobes but the intermediate lobe may be very small, and the dorsal cirrus is long. Setigerous lobe of the neuropodium with a long postsetal lip. Notosetae are spinigers throughout. Neuropodial falcigers have long straight blades anteriorly (fig. 14.3.r), but shorter ones posteriorly with a tendon at the tip (fig. 14.3.s). Posterior neuropodia also have one to three enlarged simple setae (fig. 14.3.t) formed from enlarged falcigers in which the blade has become fused to the shaft. The tip is hammer-shaped and attached back by a tendon.

TYPE LOCALITY: Durban, South Africa.

RECORDS: False Bay (32/18/i, s) to Natal (29/31 i) and Mocambique (23/35/s). Common on sheltered sandbanks.

DISTRIBUTION: Endemic.

* See footnote, page 323.

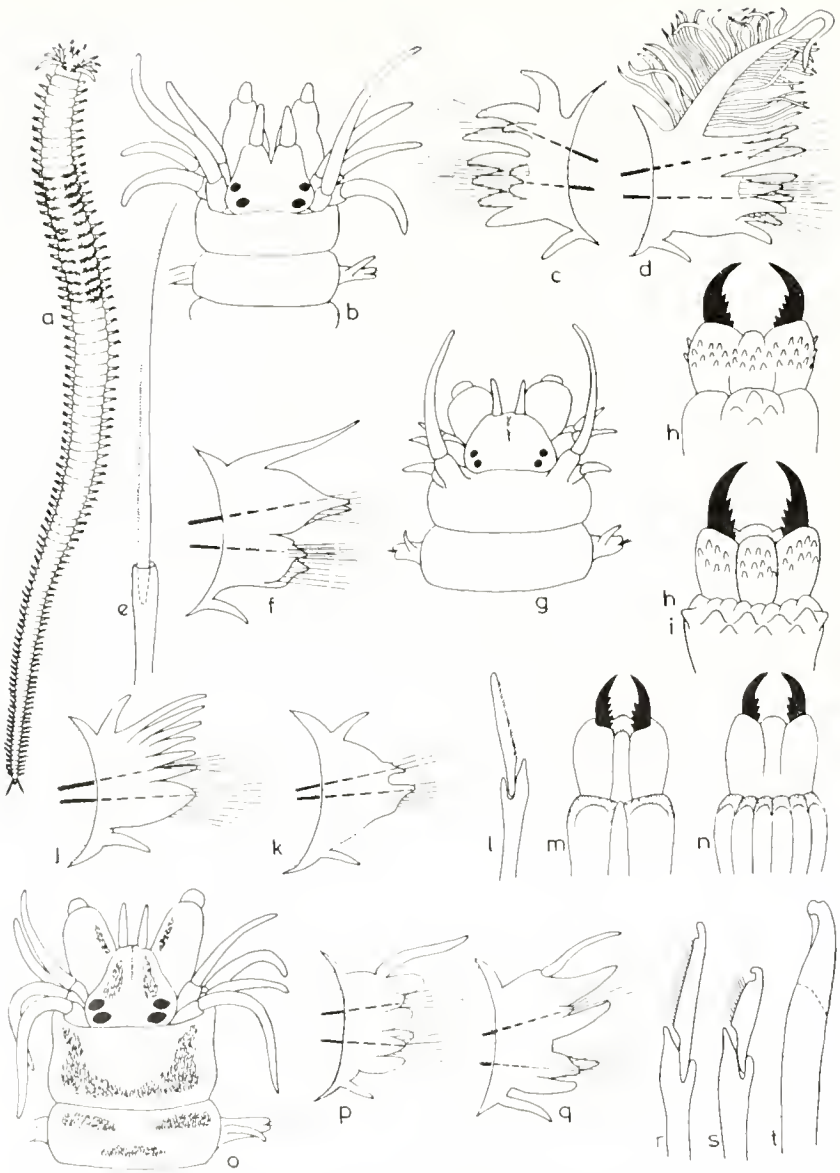

FIG. 113. *Dendronereis arborifera*. (A) Entire worm (twice natural size). (B) Head. (C) Anterior view of prebranchial foot (fifth). (D) Anterior view of branchiferous foot (18th). (E) Homogomph spiniger. (F) Posterior foot. *Dendronereides zululandica*. (G) Head. (H, I) Dorsal and ventral views of proboscis. (J) Branchiferous foot. (K) Posterior foot. (L) Faliger. *Lavonereis ankyloseta*. (M, N) Dorsal and ventral views of proboscis. (O) Head. (P) Anterior foot (10th). (Q) Posterior foot. (R) Anterior faliger. (S) Posterior faliger. (T) Enlarged simple faliger.

LEPTONEREIS Kinberg, 1866

Prostomium with two antennae. Peristome without parapodia. Proboscis without chitinous paragnaths or soft papillae. Parapodia biramous except for the first two. The superior lobe of the notopodium is expanded and lamellar in posterior feet. Notosetae consist of homogomph spinigers only. Neuropodial falcigers with long slender blades.

Type species: *Leptonereis laevis* Kinberg, 1866. No South African representative.

PLATYNEREIS Kinberg, 1866

Prostomium with two antennae. Peristome without parapodia. Proboscis with chitinous paragnaths in the form of minute pectinate bars which are present on all groups except I, and V. Parapodia biramous except for the first two. Setae include both spinigers and falcigers. Notopodial falcigers usually present.

Type species: *Platynereis magalhaensis* Kinberg, 1866.

Key to Species

1 Notopodial falcigers absent in the adult and only one or two in juveniles . ***P. australis***
– Notopodial falcigers present in posterior feet 2
2 Notopodial falcigers numerous from about the fifth foot and have short, smooth, strongly hooked apices (fig. 14.4.c) . . . . . ***P. calodonta***
– A few notopodial falcigers appear in middle feet. The long blade has a hooked tip with a terminal knob (fig. 14.4.j) . . . . . ***P. dumerilii***
– A few notopodial falcigers appear in middle feet. The blade is long but the hooked tip is smooth (fig. 14.4.l) . . . . . ***P. isolita***

Platynereis australis (Schmarda, 1861)
(fig. 14.4.m)

Heteronereis australis Schmarda, 1861: 101.
Platynereis magalhaensis Kinberg, 1866: 177; Fauvel, 1916: 434, pl. 8 figs. 21–22; Monro, 1939: 106, fig. 37.
Platynereis australis: Ramsay, 1914: 45; Day, 1953: 429.

Length up to 105 mm. in subantarctic specimens but about 30 mm. in South African specimens. Characters similar to those of *P. dumerilii* except that notopodial falcigers are absent in the adult and the dorsal cirri and notopodial lobes of posterior feet are longer (fig. 14.4.m).

Type locality: Auckland, New Zealand.

Records: South West Africa (26/15/i); Cape (from 29/16/i to 34/19/i).

Distribution: Subantarctic (i, s).

Platynereis calodonta Kinberg, 1866
(fig. 14.4.a–c)

Platynereis calodonta Kinberg, 1866: 177.
Platynereis hewitti Day, 1934: 44, fig. 9 a–f.

Length about 30 mm.; colour greenish. Prostomium longer than broad with a pair of swollen palps. Proboscis with comb-like paragnaths distributed as in other species of the genus but more strongly marked. Tentacular cirri long. Anterior feet (fig. 14.4.a) with two rounded notopodial lobes and a longer dorsal cirrus. Posterior notopodia (fig. 14.4.b) with an enlarged superior lobe bearing a long dorsal cirrus and a smaller inferior lobe. A few notopodial spinigers in all feet. Numerous notopodial falcigers present from about the fifth foot onwards. Each has a short, brown, strongly hooked blade whose tip is attached back by a tendon to the base (fig. 14.4.c). Neurosetae include both spinigers and falcigers, the latter having obvious tendons attached to the tips of the blades.

Type locality: Cape of Good Hope.

Records: From False Bay (34 18 i, s) to Natal (29 31 i) – common among algae on rocky shores.

Distribution: Endemic.

Platynereis dumerilii (Audouin & Milne-Edwards, 1833)
(fig. 14.4.d–k)

Nereis dumerilii Audouin & Milne-Edwards, 1834: 196.
Platynereis dumerilii: Fauvel, 1923: 359, fig. 141 a–f.

Body (fig. 14.4.d) up to 45 mm. long. Colour greenish often with a pale dorsal stripe. Prostomium longer than broad with large swollen palps. Proboscis (fig. 14.4.e, f) with comb-like paragnaths distributed as in other species of the genus. Tentacular cirri long. Anterior feet (fig. 14.4.g) with two large rounded notopodial lobes, a minute intermediate lobe and a long dorsal cirrus. In posterior feet (fig. 14.4.i) there are two conical notopodial lobes and a longer dorsal cirrus. Notosetae include numerous spinigers and, from middle feet onwards, two to three homogomph falcigers (fig. 14.4.j). The blade is elongate and sharply bent back at the tip which has a terminal knob. Neurosetae include spinigers (fig. 14.4.h) and falcigers (fig. 14.4.k), the latter having blades whose curved tips are attached back by short tendons. In the heteronereid stage the first modified foot of the male is the 15th and of the female the 18th.

Type locality: France.

Records: South West Africa (22 14 i and 26 15 i); around the Cape (34 18 i, s) to Natal (29 31 i) – very common, forming mucous tubes among algae.

Distribution: Cosmopolitan in temperate and tropical waters.

Platynereis isolita Gravier, 1901
(fig. 14.4.l)

Platynereis isolita Gravier, 1901 : 197, pl. 12 fig. 53, text-figs. 203–206.

Length about 25 mm. This species is essentially similar to *P. dumerilii* but differs in the shape of the notopodial falcigers. Whereas in *P. dumerilii* the blade has a knob at the tip, in *P. isolita* the tip is smoothly curved (fig. 14.4.l).

TYPE LOCALITY: Red Sea.

RECORDS: Mocambique (26/32/i, 23/35/e); Madagascar (s) – a few specimens.

DISTRIBUTION: Red Sea (i); Ceylon; Madras; Andaman Is.

NEREIS Linnaeus, 1758

Prostomium with two antennae. Peristomial segment apodous. Proboscis with conical chitinous paragnaths on both the basal and the maxillary ring. The first two feet are uniramous, the rest biramous. Both spinigers and falcigers are usually present, but simple setae are either absent or very rare.

TYPE SPECIES: *Nereis pelagica* Linnaeus, 1758.

KEY TO SPECIES

1	Notopodial falcigers present on posterior feet (subgenus *Nereis*)	2
–	Notopodial falcigers absent from posterior feet (subgenus *Neanthes*)	11
2	All paragnaths as very minute, pale granules. A broad band on VII and VIII	***N.* (*Nereis*) *granulata*** (p. 309)
–	Paragnaths of normal size with not more than four or five rows on VII and VIII	3
3	Groups VII and VIII as a single row except in juveniles where it may be double	4
–	Groups VII and VIII as an irregular band two to four deep	8
4	Notopodial falcigers with one to three large teeth	5
–	Notopodial falcigers either smooth or lightly serrated	6
5	Prostomium deeply notched between the antennae	***N.* (*Nereis*) *falcaria*** (p. 309)
–	Prostomium not notched	***N.* (*Nereis*) *jacksoni*** (p. 311)
6	Superior lobe of notopodium expanded and lamellate in posterior feet	***N.* (*Nereis*) *coutierei*** (p. 311)
–	Superior lobe of notopodium not expanded	7
7	Notopodial falcigers with very short, conical apices	***N.* (*Nereis*) *eugeniae*** (p. 312)
–	Notopodial falcigers with long, almost straight blades	***N.* (*Nereis*) *trifasciata*** (p. 312)
8	Apices of notopodial falcigers with one to three large teeth	***N.* (*Nereis*) *persica*** (p. 314)
–	Apices of notopodial falcigers either smooth or lightly serrate	9
9	Anterior notopodia with three lobes. (Superior lobe of posterior feet expanded and lamellate with the cirrus terminal)	***N.* (*Nereis*) *lamellosa*** (p. 314)
–	Anterior notopodia with two lobes	10
10	Posterior neurosetae include a simple hook (fig. 14.w)	***N.* (*Nereis*) *gilchristi*** (p. 315)
—	Posterior neurosetae without simple setae	11
11	Apices of notopodial falcigers as smooth cones	***N.* (*Nereis*) *pelagica*** (p. 315)
—	Apices of notopodial falcigers serrate and the ends bent and attached by a ligament	***N.* (*Nereis*) *falsa*** (p. 317)
12	Paragnaths of groups V and VI separate and VII and VIII as a single row	13
—	Paragnaths of V and VI separate and VII and VIII forming a band two to four deep	16
—	Paragnaths of basal ring forming a continuous band which is broad ventrally	20

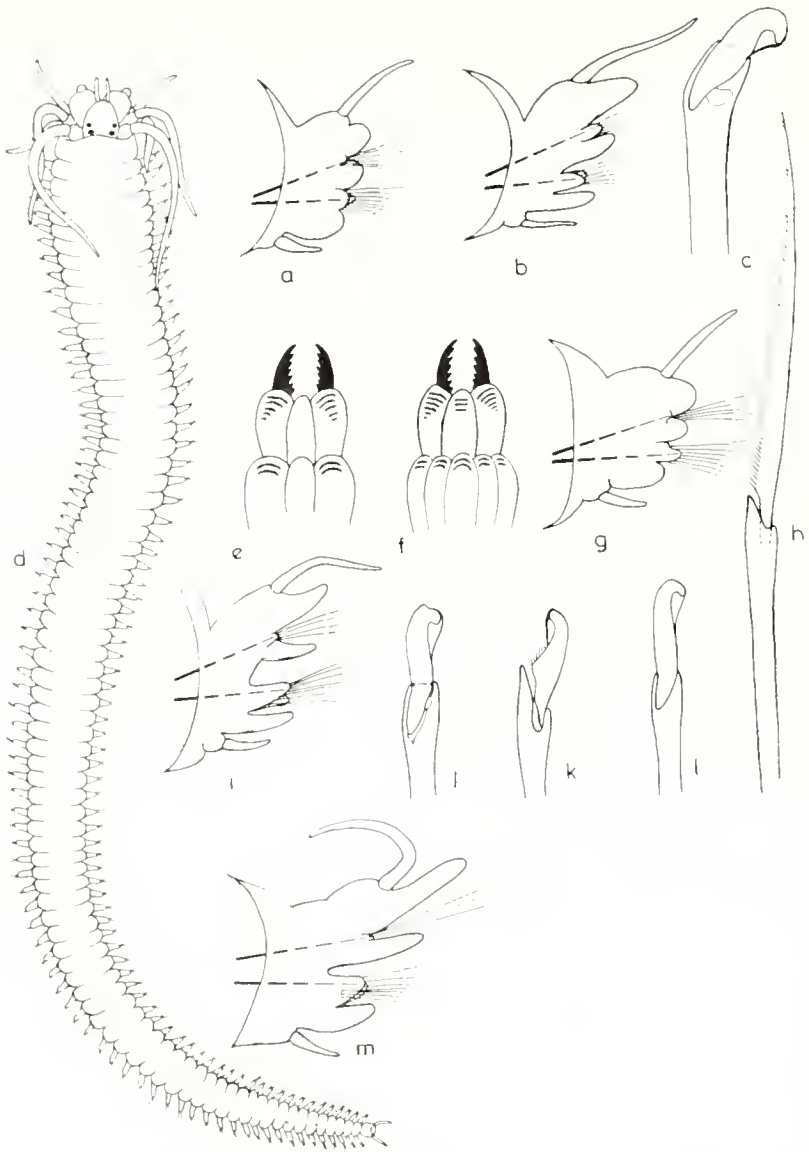

FIG. 144. *Platynereis calodonta*. (A) Anterior foot. (B) Posterior foot. (C) Homogomph falcigers. *Platynereis dumerilhi*. (D) Entire worm. (E, F) Dorsal and ventral views of proboscis. (G) Anterior foot. (H) Heterogomph spiniger. (I) Posterior foot. (J) Notopodial falciger. (K) Neuropodial falciger. *Platynereis isolita*. (L) Notopodial falciger. *Platynereis australis*. (M) Posterior foot.

13 Lobes of middle feet papillose. No brown bar on setiger 2. Group VI with two to three pale paragnaths . . . . . ***N.* (*Neanthes*) *papillosa*** (p. 317)
— Lobes of middle feet not papillose 14
14 More than one paragnath on group VI. A brown bar on setiger 2 15
— One paragnath on group VI. No brown bar on setiger 2. Setigerous lobe of anterior neuropodia with a digitiform presetal lip . . . ***N.* (*Neanthes*) *kerguelensis****
15 Two notopodial lobes on anterior feet. Paragnaths on group I = a line of one to six ***N.* (*Neanthes*) *unifasciata*** (p. 318)
— Three notopodial lobes on anterior feet. Paragnaths on group I = o ***N.* (*Neanthes*) *agulhana*** (p. 318)
16 Group VI with one large point . . . . ***N.* (*Neanthes mossambica*** (p. 318)
— Group VI with several points 17
17 Anterior notopodia with two lobes. Superior lobe of posterior feet not expanded ***N.* (*Neanthes*) *willeyi*** (p. 320)
— Anterior notopodia with three lobes 18
18 Superior lobe of posterior feet not expanded. Peristome brown ***N.* (*Neanthes*) *indica brunnea*** (p. 320)
— Superior lobe of posterior feet expanded 19
19 Falcigers entirely absent. Spinigers with short blades . ***N.* (*Neanthes*) *agnesiae*** (p. 321)
— Neuropodial falcigers present . . . . . ***N.* (*Neanthes*) *succinea*** (p. 321)
20 Superior lobe of posterior feet expanded . . . ***N.* (*Neanthes*) *caudata*** (p. 321)
— Superior lobe of posterior feet elongate . . . . ***N.* (*Neanthes*) *operta*** (p. 323)

Nereis* (*Nereis*) *granulata Day, 1957
(fig. 14.5.a–g)

Nereis granulata Day, 1957 : 82, fig. 4 a–g.

A small species 26 mm. long for 50 segments with brown bands on setigers 2 and 3 and spots on other segments (fig. 14.5.a). All paragnaths (fig. 14.5.b, c) minute, pale and granular. Group I with a patch of 6, II a wedge-shaped area, III a small oval patch, IV a wedge, V absent, VI a rosette of about 6, VII and VIII a very broad ventral band. Anterior feet (fig. 14.5.d) with two notopodial lobes and a longer dorsal cirrus. Posterior feet similar but the dorsal cirrus is relatively longer (fig. 14.5.e). Posterior feet bear one to two notopodial falcigers (fig. 14.5.f) with straight conical blades lightly serrate at the base. Neuropodial falcigers (fig. 14.5.g) have rather straight blades.

Type locality : Inhaca Is., Delagoa Bay.

Records : Mocambique (26/32/i) – a single record.

Nereis* (*Nereis*) *falcaria (Willey, 1905)
(fig. 14.5.h–m)

Ceratonereis falcaria Willey, 1905 : 272, pl. 4 fig. 89.
Nereis kauderni Fauvel, 1921 : 8, pl. 1 figs. 1–7.
Nereis falcaria : Knox, 1951 : 215, pl. 44 figs. 1–5.

A small slender species up to 30 mm. long with a pattern of broken brown bars anteriorly (fig. 14.5.h). Prostomium deeply notched between the antennae ; tentacular cirri short. Proboscis (fig. 14.5.i, j) with group I = o, II as a double row of

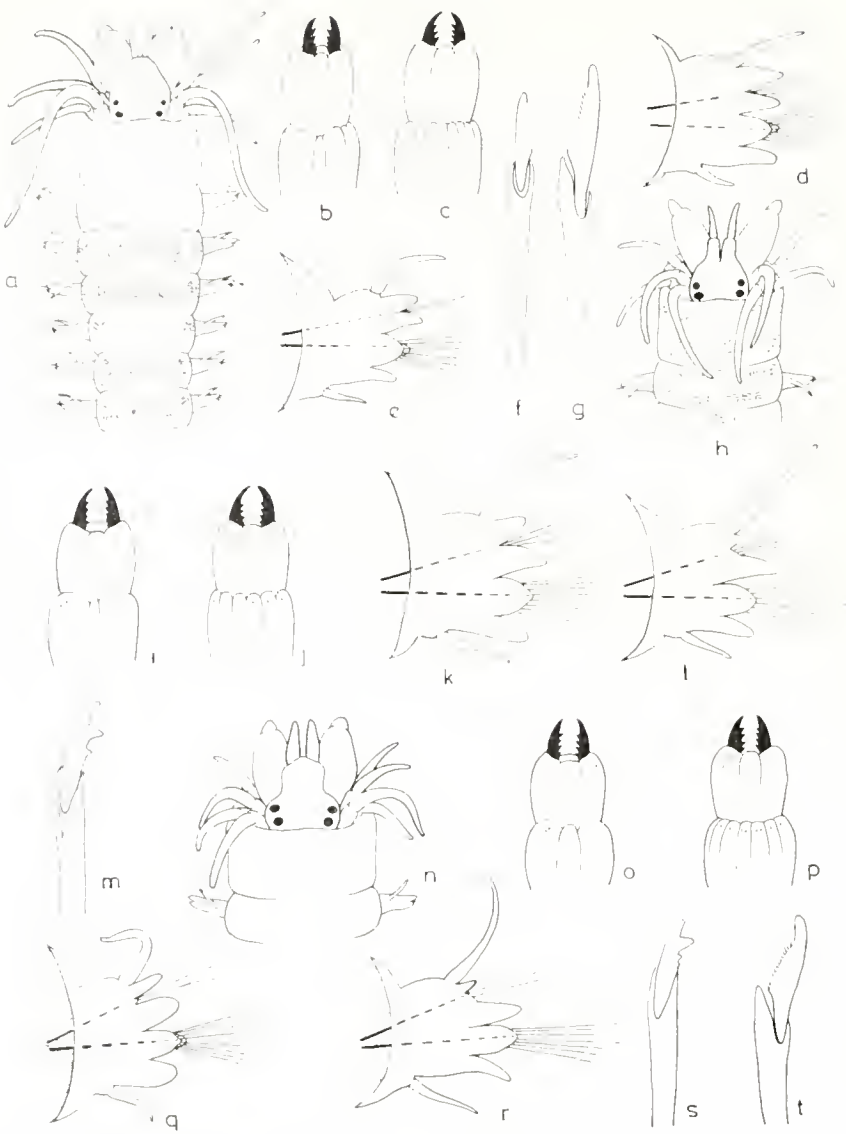

FIG. 14.5. *Nereis granulata*. (A) Anterior end. (B, C) Dorsal and ventral views of proboscis. (D) Anterior foot. (E) Posterior foot. (F) Notopodial falciger. (G) Neuropodial falciger. *Nereis falcaria*. (H) Head. (I, J) Dorsal and ventral views of proboscis. (K) Anterior foot. (L) Posterior foot. (M) Notopodial falciger. *Nereis jacksoni*. (N) Head. (O, P) Dorsal and ventral views of proboscis. (Q) Anterior foot. (R) Posterior foot. (S) Notopodial falciger. (T) Neuropodial falciger.

about 8, III as a scattered group of 5–10, IV as a wedge-shaped group of 6–10, V = 0, VI is a close-set cluster of 3–4, VII and VIII is a single row of about 8 points. All paragnaths may be pale and very difficult to see. Notopodia have two lobes in all feet (figs. 14.5.k, l), but the superior one is always small and decreases in size posteriorly. Dorsal cirri longer than notopodial lobes. In the posterior notopodia there are one to two large homogomph falcigers (fig. 14.5.m) whose blades have two to three large teeth.

Type locality: Ceylon.

Records: Cape (34/18/i, 34/19/i, 34/20/i) and Mocambique (26/32/i) – occasional specimens.

Distribution: Indo-west-Pacific (i, s); New Zealand (i, s).

Nereis (*Nereis*) *jacksoni* Kinberg, 1866
(fig. 14.5.n–t)

Nereis Jacksoni Kinberg, 1866: 169.
Nereis jacksoni: Augener, 1922: 18; Fauvel, 1932: 97; Fauvel, 1953: 189, fig. 95 e.

A small species, measures 15–25 mm. Prostomium (fig. 14.5.n) not notched anteriorly. Tentacular cirri short. Proboscis (fig. 14.5.o, p) with group I = 0, II as a double row, III as an oval patch of 4–6 sometimes lacking, IV as a wedge-shaped group, V = 0, VI as a small close-set group of 3–6, VII and VIII as a single row of 7–8. All paragnaths may be pale and difficult to see. Anterior feet (fig. 14.5.q) with two notopodial lobes and a longer dorsal cirrus. The superior lobe of the notopodium is always small and in posterior feet (fig. 14.5.r) the superior lobe is even smaller. The notosetae are homogomph spinigers anteriorly but in posterior notopodia these are replaced by one to two stout falcigers (fig. 14.5.s) whose dark blades have two to three large teeth. In the neuropodia the heterogomph falcigers (fig. 14.5.t) have slightly curved blades.

Type locality: Port Jackson, Australia.

Records: Cape (34/24/d, 34/25/s, 33/28/s); Natal (30/30/s) and Mocambique (26/32/i, 24/34/s; Madagascar (s) – common in tropical waters.

Distribution: Indo-west-Pacific (i, s); Red Sea (s); South Australia; New South Wales (i, s); Chatham Is. (i).

Nereis (*Nereis*) *coutierei* Gravier, 1899
(fig. 14.6.a–e)

Nereis coutierei Gravier, 1899: 237; Gravier, 1901: 167, pl. 11 figs. 38–41, text-figs. 166–172.

A small species about 25 mm. long. Proboscis (fig. 14.6.a, b) with group I = 0–1, II = 2–6 in a line, III is a small irregular group, IV is a triangular group, V = 0, VI is a close-set cluster of about 5, VII and VIII is a single row of about 8 points. Anterior feet (fig. 14.6.e) have two notopodial lobes and a longer dorsal cirrus. In

posterior feet (fig. 14.6.d) the superior lobe of the notopodium is expanded and the dorsal cirrus is long. Posterior notosetae include one to two homogomph falcigers (fig. 14.6.e) with straight, smooth apices.

Type locality: Red Sea.

Records: Natal (30/30/i, 29/31/i, 27/32/i) and Mocambique (26/32/i) – occasional specimens on rocky shores.

Distribution: Suez Canal, Red Sea (e, i, s) and tropical Indian Ocean.

Nereis (*Nereis*) *trifasciata* Grube, 1878
(fig. 14.6.l–p)

Nereis (*Lycoris*) *trifasciata* Grube, 1878: 74.
Nereis trifasciata: Fauvel, 1953: 183, fig. 91 d–e.
Nereis unifasciata: (non Willey) Fauvel, 1921: 7, pl. 1 figs. 8, 9.

Length 15–30 mm. Prostomium rather long. Proboscis (fig. 14.6.l, m) with group I = 0–1, II = a double row, III = 6–12 in an oval, IV = a long triangular group, V = 0, VI = a close-set group of 3–9, VII and VIII = a single row of 8 except in juveniles where there may be second row. Tentacular cirri long. Anterior feet (fig. 14.6.n) with two notopodial lobes and a slightly longer dorsal cirrus. Posterior feet (fig. 14.6.o) very similar but the superior lobe of the notopodium is slightly expanded. From the middle of the body onwards, one to two homogomph falcigers accompany the spinigers in the notopodium. They have straight elongate blades slightly serrated near the base (fig. 14.6.p).

Type locality: Philippine Islands.

Records: Mocambique (26/32/i); Madagascar (s) – rare.

Distribution: Tropical Indo-west-Pacific (i); Red Sea (i, s); Madagascar (i); Juan Fernandez Is.

Nereis (*Nereis*) *eugeniae* (Kinberg, 1866)
(fig. 14.6.f–k)

Nicon Eugeniae Kinberg, 1866: 178.
Nereis eugeniae: Ehlers, 1897: 67, pl. 4 figs. 94–105; Monro, 1936: 136; Day, 1960: 322.

Length of S. American specimens up to 140 mm. and of S. African specimens 30 mm. Anterior part of prostomium free from base of palps. Eyes small. Proboscis (fig. 14.6.f, g) with group I = 0, II = 3–6 in a wedge, III = 0–3, IV = a wedge of about 6–10, V = 0, VI = a transverse group of 3–5, VII and VIII = a single row of 4–6. Tentacles short. Anterior feet (fig. 14.6.h) have two notopodial lobes and a rather short dorsal cirrus. Posterior feet (fig. 14.6.i) are similar but all lobes are more pointed. The superior lobe of the notopodium is long and pointed, not expanded and bears a delicate dorsal cirrus on its upper margin. Anterior notosetae are homogomph spinigers and anterior neurosetae include spinigers plus

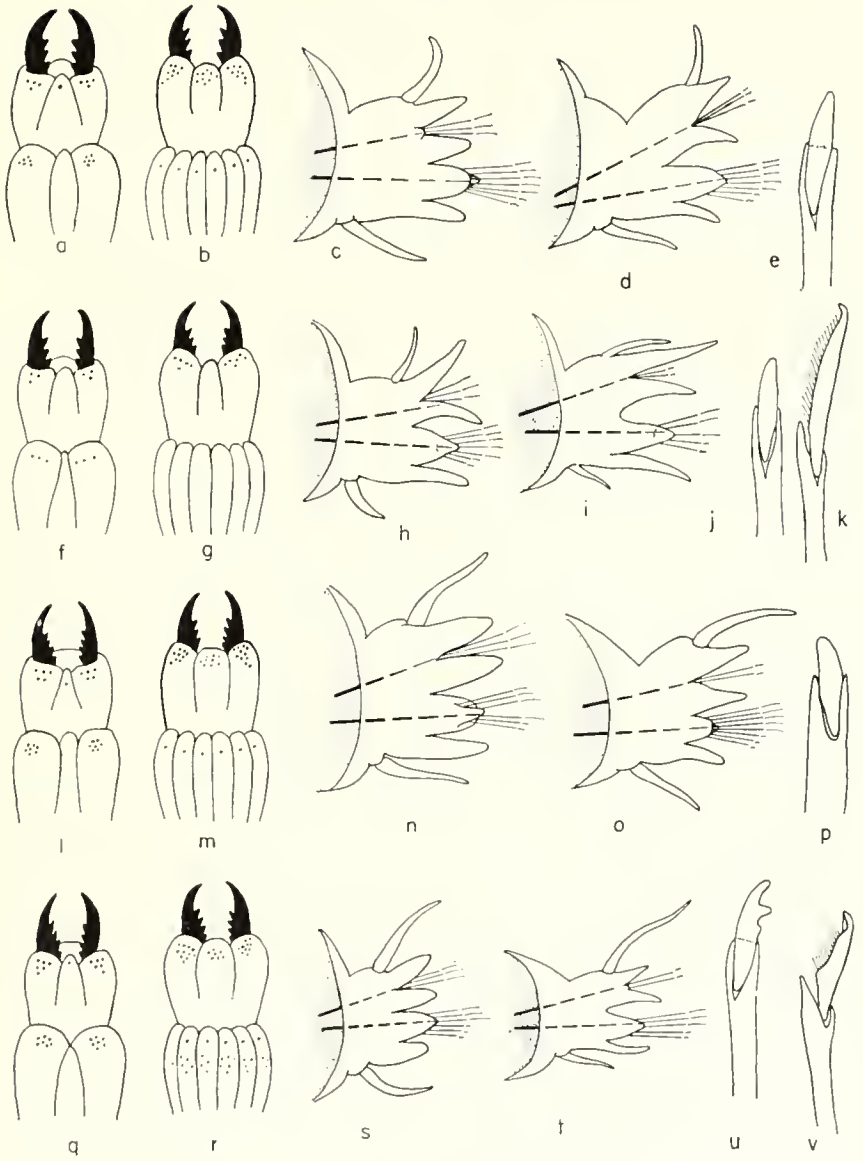

FIG. 14.6. *Nereis coutierei*. (A, B) Dorsal and ventral views of proboscis. (C) Anterior foot. (D) Posterior foot. (E) Notopodial falciger. *Nereis eugeniae*. (F, G) Dorsal and ventral views of proboscis. (H) Anterior foot. (I) Posterior foot. (J) Notopodial falciger. (K) Neuropodial falciger. *Nereis trifasciata*. (L, M) Dorsal and ventral views of proboscis. (N) Anterior foot. (O) Posterior foot. (P) Notopodial falciger. *Nereis persica*. (Q, R) Dorsal and ventral views of proboscis. (S) Anterior foot. (T) Posterior foot. (U) Notopodial falciger. (V) Neuropodial falciger.

falcigers with long straight blades (fig. 14.6.k). Posterior notosetae few, often limited to two homogomph falcigers with short conical blades (fig. 14. 6.j). Posterior neurosetae similar to anterior ones.

Type locality: Rio de la Plata, Argentine.

Records: Western Cape (32°17'd, 32°18'd, 33°18'd, 34°17'd) – several specimens.

Distribution: Chile (41°S. i, s), Argentine and Subantarctic, e.g. (Magellan area (i, s), Falkland Is. (i, s), Kerguelen Is. (s)).

Nereis (*Nereis*) *persica* Fauvel, 1911
(fig. 14.6.q–v)

Nereis zonata var. *persica* Fauvel, 1911: 385, pl. 19 figs. 10–16, 18–23, pl. 20 figs. 24, 25.
Nereis zonata-persica: Fauvel, 1953: 187, fig. 95 f–h.

Length 15–30 mm. Prostomium broadly triangular. Proboscis (fig. 14.6.q, r) with group I = 0–1, II = a double row, III = a few scattered points, IV = 2–3 rows, V = 0, VI = a cluster of 6–10, VII and VIII = a broad band with an anterior row of large points and two to three posterior rows of fine points. Anterior feet (fig. 14.6.s) have two notopodial lobes and a long dorsal cirrus. Posterior feet (fig. 14.6.t) are similar but both notopodial lobes are smaller and more slender. Posterior notosetae include one to two dark homogomph falcigers (fig. 14.6.u) which have blades with two to three blunt teeth. Neuropodial falcigers (fig. 14.6.v) have curved blades with a slight tendon at the tip.

Type locality: Bahrain, Persian Gulf.

Records: Cape (31°29's); Natal (29°31's) and Mocambique (24°34's, 23°35's); Madagascar (s) – several specimens.

Distribution: Red Sea; tropical Indo-west-Pacific (i, s).

Nereis (*Nereis*) *lamellosa* Ehlers, 1868
(fig. 14.7.a–e)

Nereis lamellosa Ehlers, 1868: 564, pl. 22 figs. 10–17; Fauvel, 1936: 36.

Length 20–30 mm. Head and anterior segments pale brown; prostomium as broad as long; tentacular cirri rather short. Proboscis (fig. 14.7. a,b) with group I = 1–3, II = an oblique double row, III = about three rows totalling 20–30, IV = a wedge-shaped group, V = 0–3, VI = a rosette of about 10, VII and VIII = three or four irregular rows. Anterior feet (fig. 14.7.c) with three notopodial lobes and a short dorsal cirrus. In middle feet the intermediate notopodial lobe decreases and the superior lobe becomes expanded and bears the dorsal cirrus near its end; finally in posterior feet (fig. 14.7.d) the superior lobe is large and lamellate with the short dorsal cirrus in a terminal notch, the intermediate lobe is lost and the inferior notopodial lobe is lanceolate. Notosetae of posterior feet are mainly homogomph

spinigers but there are also homogomph falcigers in some feet with elongate, lightly serrated blades (fig. 14.7.e).

TYPE LOCALITY: Adriatic Sea.

RECORDS: Cape from 32/18/s and 34/23/s, d to 33/27/s – fairly common in dredgings.

DISTRIBUTION: Morocco (s, d); Senegal (d).

Nereis (*Nereis*) *gilchristi* sp. nov.
(fig. 14.8.w)

Nereis (*Nereis*) sp. Day, 1960: 323, fig. 8a.

Body 8 mm. long for 40 segments. Prostomium broad, tentacles short. Proboscis with group I = 1, II = a close-set wedge, III = a few scattered points, IV = a wedge, V = 0, VI = a rosette of 8–10 points, VII and VIII = a continuous row two to three deep. Anterior feet with two notopodial lobes. Posterior feet with an enlarged and flattened superior lobe bearing the cirrus at its apex. Posterior feet have two to three notopodial falcigers with long straight blades and the neurosetae include one to two simple hooks (fig. 14.8.w) formed by the fusion of the falcate blade to the shaft. Holotype: B.M. (N.H.) Reg. No. 1966. 26. 7.

TYPE LOCALITY: Agulhas Bank, South Africa.

RECORDS: Cape (34/21/s).

DISTRIBUTION: Only a single record.

Nereis (*Nereis*) *pelagica* Linnaeus, 1758
(fig. 14.7.f–j)

Nereis pelagica Linnaeus, 1758: 654; Fauvel, 1923: 336, fig. 130 a–f.

Length 60–120 mm. with 80–120 segments. Prostomium as a broad inverted T with large palps and rather short tentacular cirri. Proboscis (fig. 14.7.f, g) with group I = 2–3, II = an oblique double row, III = an oval patch, IV = a wedge-shaped group, V = 0, VI = 4–5 large points in a cross, VII and VIII = 1–2 irregular rows of large points followed by several irregular rows of smaller ones. Anterior feet (fig. 14.7.h) with two subequal notopodial lobes and a longer dorsal cirrus. Posterior feet (fig. 14.7.i) essentially similar. Notosetae of posterior feet include homogomph spinigers plus a single falciger with a short, smooth blade (fig. 14.7.j).

TYPE LOCALITY: Western Europe.

RECORDS: Cape (33/18/i, s); Mocambique (24/34/s) – rare.

DISTRIBUTION: Arctic; Atlantic coasts of Europe (i); Mediterranean; Senegal (i); Okhotsk Sea (s); South Pacific.

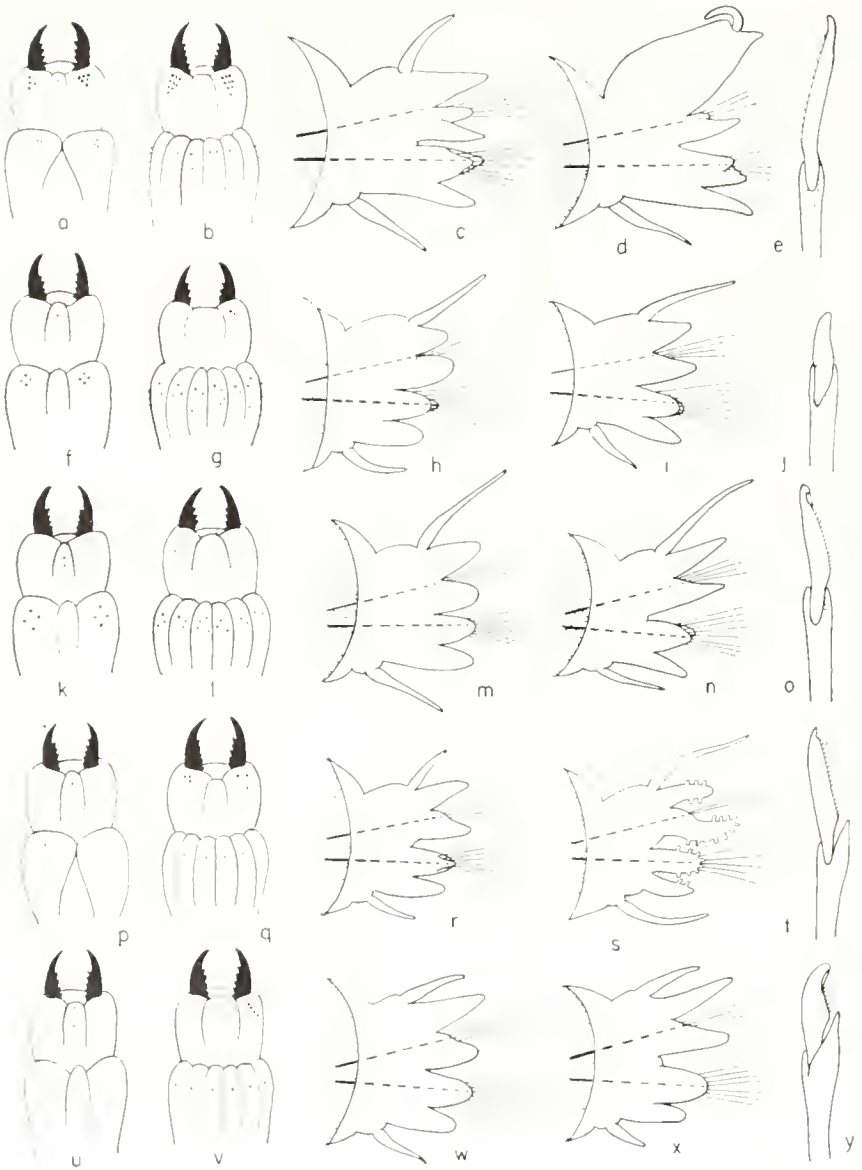

FIG. 14.7. *Nereis lamellosa*. (A, B) Dorsal and ventral views of proboscis. (C) Anterior foot. (D) Posterior foot. (E) Notopodial falciger. *Nereis pelagica*. (F, G) Dorsal and ventral views of proboscis. (H) Anterior foot. (I) Middle foot. (J) Notopodial falciger. *Nereis falsa*. (K, L) Dorsal and ventral views of proboscis. (M) Anterior foot. (N) Posterior foot. (O) Notopodial falciger. *Nereis papillosa*. (P, Q) Dorsal and ventral views of proboscis. (R) Anterior foot. (S) Posterior foot. (T) Neuropodial falciger of posterior foot. *Nereis unifasciata*. (U, V) Dorsal and ventral views of proboscis. (W) Anterior foot. (X) Posterior foot. (Y) Neuropodial falciger of posterior foot.

Nereis (*Nereis*) *falsa** Quatrefages, 1865 (*sensu* Fauvel, 1923)
(fig. 14.7.k–o)

Nereis falsa Quatrefages, 1865: 505; Fauvel, 1923: 337, fig. 129 e–m.

Body about 40 mm. long with 60–90 segments. Prostomium a broad inverted T with long palps and tentacular cirri of varying length. Proboscis (fig. 14.7.k, l) with group I = 2–3 in line, II = a wedge of about 30 equal points, III = an oval of about 20 points, IV = a wedge of about 35 points, V = 0, VI = 4 points in a square, VII and VIII = 2–3 irregular rows of large subequal points. Anterior feet (fig. 14.7.m) with two notopodial lobes and a slightly longer dorsal cirrus. Posterior feet (fig. 14.7.n) with two conical notopodial lobes and a slender dorsal cirrus twice their length. Posterior notosetae include one to three homogomph spinigers plus one falciger whose blade is fairly long and finely serrate with a knobbed tip attached back by a tendon (fig. 14.7.o). The heterogomph falcigers of the neuropodium are very similar but the blades are slightly more triangular.

Type locality: Mediterranean Sea.

Records: South West Africa (22/14/i and 26/15/s); around the Cape (31/29/i) to Natal (28/32/i) – common on rocky shores in Natal.

Distribution: Atlantic coasts of France and Morocco (i), North Carolina (s); Tropical West Africa (i, s); Mediterranean; Madagascar (i).

Nereis (*Neanthes*) *papillosa* Day, 1963
(fig. 14.7.p–t)

Nereis (*Neanthes*) *papillosa* Day, 1963: 360, fig. a–g.

Body 25 mm. long, without colour markings. Prostomium broad. Palps stout. Paragnaths pale and poorly chitinised. Proboscis (fig. 14.7.p, q) with group I = 1, II = 3–4, III = 3–4, IV = 5–6 in a wedge, V = 0, VI = 2 or 3 (very faint), VII and VIII = a single row of 3–4. Anterior feet (fig. 14.7.r) with a short dorsal cirrus and two notopodial lobes. Posterior feet (fig. 14.7.s) with a gap between the notopodium and neuropodium and the dorsal cirrus slightly longer than the superior lobe of the notopodium. From the middle of the body all the lobes of the parapodia develop numerous club-shaped papillae. Notosetae are homogomph spinigers throughout. Neurosetae include both spinigers and falcigers with long blades (fig. 14.7.t).

Type locality: 2,000 metres west of Cape Town.

Records: Cape (33/16/a) – single specimen on globigerina ooze.

*According to Hartman (1959) *Nereis falsa* Quatrefages is a synonym of *N. diversicolor*. South African specimens are not *N. diversicolor* but agree with Fauvel's description of *N. falsa*. See discussion in Day (1962).

Nereis (*Neanthes*) *unifasciata* Willey, 1905
(fig. 14.7.u–y)

Nereis unifasciata Willey, 1905: 271, pl. 4 figs. 85–88; Fauvel, 1953: 182, fig. 92 a–h.

Length 20–30 mm. Prostomium rather long and often touched with brown. Tentacular cirri long. A brown bar across setiger 2. Proboscis (fig. 14.7.u, r) with group I = 1–6 in line, II = a double row, III = a small patch of 7–15, IV = a wedge-shaped group, V = 0–1, VI = a rounded or rectangular group of 3–8, VII and VIII = a single row of about 7. Anterior feet (fig. 14.7.w) with two notopodial lobes and a shorter dorsal cirrus. Posterior feet (fig. 14.7.x) with all lobes more pointed and the superior notopodial lobe elongate. No notopodial falcigers. Neuropodial falcigers with short hooked blades with the tip attached back by a distinct tendon (fig. 14.7.y).

Records: ? Mocambique (26/32/i) – rare.

Distribution: Tropical Indo-west-Pacific (i, s).

Nereis (*Neanthes*) *agulhana* Day, 1963
(fig. 14.8.a–f)

Nereis (*Neanthes*) *agulhana* Day, 1963b: 406, fig. 6 d–j.
Nereis (*Neanthes*) cf. *kerguelensis*: Day, 1960: 321.

Body about 20 mm. long with brown bar across setiger 2 (fig. 14.8.a). Proboscis (fig. 14.8.b, c) with group I = 0, II = 8–9 in a double row, III = 5–6 in a crescentric area, IV = a wedge of about 10, V = 0, VI = 2–4 in a line, VII and VIII = a single row of 3–5. Anterior feet (fig. 14.8.d) with three notopodial lobes, the intermediate one being smaller than the other two. Posterior feet (fig. 14.8.e) with two notopodial lobes. Dorsal cirrus a little longer than the superior lobe. No notopodial falcigers. Each neuropodial falciger (fig. 14.8.f) with rather straight blade whose end is attached back by an indistinct tendon.

Type locality: Agulhas Bank, South Africa.

Records: Cape (34/18/s to 34/23/s, d and 33/28/s) – common in dredgings on sandy mud.

Distribution: Endemic.

Nereis (*Neanthes*) *mossambica* Day, 1957
(fig. 14.8.g–k)

Nereis (*Neanthes*) *mossambica* Day, 1957: 78, fig. 3 e–k.

Body up to 35 mm. in length. Proboscis (fig. 14.8.g, h) with group I = 1–3 in a line, II = 10–12 in two to three irregular rows, III = a patch of about 20, IV = a wedge of about 20, V = 0, VI = 1 large oval paragnath, VII and VIII = two to three irregular rows. Anterior feet (fig. 14.8.i) with three notopodial lobes though

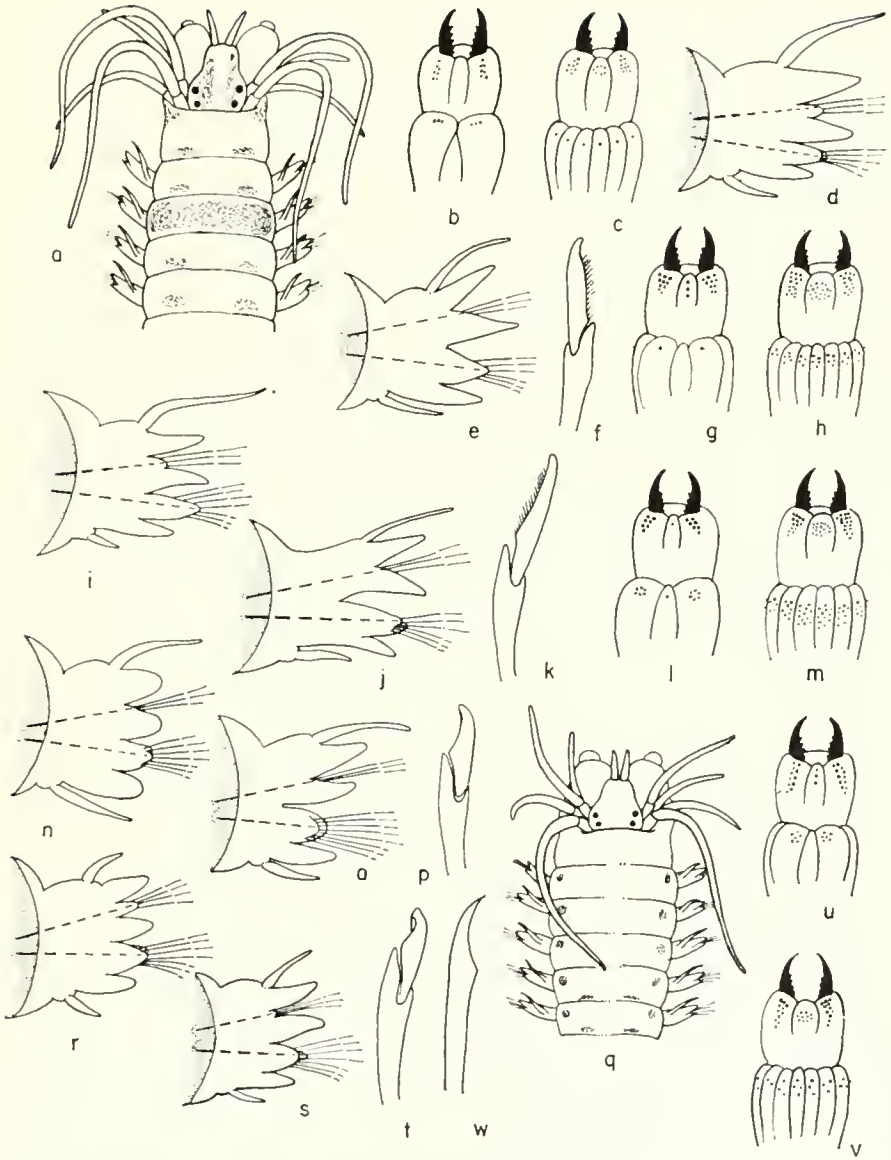

FIG. 14.8. *Nereis agulhana.* (A) Anterior end. (B, C) Dorsal and ventral views of proboscis. (D) Anterior foot. (E) Posterior foot. (F) Neuropodial falciger. *Nereis mossambica.* (G, H) Dorsal and ventral views of proboscis. (I) Anterior foot. (J) Posterior foot. (K) Neuropodial falciger. *Nereis willeyi.* (L, M) Dorsal and ventral views of proboscis. (N) Anterior foot. (O) Posterior foot. (P) Neuropodial falciger. *Nereis indica brunnea.* (Q) Anterior end. (R) Anterior foot. (S) Posterior foot. (T) Neuropodial falciger. (U, V) Dorsal and ventral views of proboscis. *Nereis gilchristi.* (W) Simple hook.

the setigerous lobe is small and fused to the inferior lobe. Dorsal cirrus longer than the superior lobe. Posterior feet (fig. 14.8.j) with two pointed notopodial lobes, the whole notopodium being longer than the neuropodium and separated from it by a marked cleft. Dorsal cirrus not greatly elongated. No notopodial falcigers. Neuropodial falcigers (fig. 14.8.k) with almost straight blades.

TYPE LOCALITY: Morrumbene estuary, Mocambique.

RECORDS: Mocambique (23/35/s).

DISTRIBUTION: Known only from the original record.

Nereis (*Neanthes*) *willeyi* Day, 1934
(fig.14.8.l–p)

Nereis willeyi Day, 1934: 39 nom. nov. pro *Nereis* (*Neanthes*) *capensis* Willey, 1904: 216, pl. 13 fig. 10 [non *Nereis* (*Perinereis*) *capensis* (Kinberg, 1865)].

Body up to 50 mm. long and often reddish. Prostomium broad. Proboscis (fig. 14.8.l, m) with group I = 1–2 in line, II = an oblique double row, III = an oval patch, IV = a wedge-shaped group, V = 0–1, VI = a rosette of 6, VII and VIII = 3–4 irregular rows of numerous points. Anterior feet (fig. 14.8.n) with two notopodial lobes and a longer dorsal cirrus. Posterior feet (fig. 14.8.o) essentially similar but the dorsal cirrus is relatively longer. No notopodial falcigers. Neuropodial falcigers of posterior feet have blades with distinct tendons attached to their tips (fig. 14.8.p).

TYPE LOCALITY: Table Bay, South Africa.

RECORDS: From 32/18/i around the Cape (34/18/i, s) to Natal (30/30/i) – common on rocky shores and shallow dredgings.

DISTRIBUTION: Suez Canal and Persian Gulf.

Nereis (*Neanthes*) *indica brunnea* Day, 1957
(fig. 14.8.q–v)

Nereis (*Neanthes*) *indica* var. *brunnea* Day, 1957: 80, fig. 4 h–n.

A small species about 15 mm. long with a brown peristome (fig. 14.8.q). Proboscis (fig. 14.8.r, s) with group I = 2–3 in line, II = a double row, III = an oval patch, IV = a wedge of numerous points, V = 0, VI = a group of 6, VII and VIII = 2–3 irregular rows. Anterior feet (fig. 14.8.t) with three notopodial lobes and a dorsal cirrus the same length as the superior lobe. Posterior feet (fig. 14.8.u) with two notopodial lobes and a slightly longer dorsal cirrus. No notopodial falcigers. Neuropodial falcigers (fig. 14.8.v) with a blade having a well marked tendon attached to the tip.

TYPE LOCALITY: Inhambane, Mocambique.

RECORDS: Mocambique (23/35/e); Madagascar (s).

Nereis (*Neanthes*) *agnesiae* Augener, 1918

Nereis (*Alitta*) *agnesiae* Augener, 1918: 194, pl. 3 figs. 69–71, pl. 4 figs. 76, 76, text-fig. 14.

Length about 80 mm. for 90 segments. Prostomium a broad inverted T, with broad palps and short tentacular cirri. Proboscis with group I = 2 in line, II = 12–15 in a double row, III = a triangular group of 16, IV = a wedge of 18–24, V = a group of 5, VI = a rosetter of 10, VII and VIII = 2–3 rows of larger and smaller points. Anterior feet with three notopodial lobes and a short dorsal cirrus. In middle feet the superior notopodial lobe is expanded and bears the dorsal cirrus at its end, while in posterior feet it is large and lamellate with a small dorsal cirrus in a notch at its end. The setae are spinigers throughout. There are no falcigers at all.

Type locality: Swakopmund, South West Africa.

Nereis (*Neanthes*) *succinea* Frey & Leuckart, 1847
(fig. 14.9.a–c)

Nereis succinea Frey and Leuckart, 1847: 154.
Nereis glandulosa Ehlers, 1908: 74, pl. 8 figs. 1–6.

Body usually reddish brown and up to 80 mm. long. Proboscis (fig. 14.9.a, b) with group I = 1, II = a double row, III = a few scattered points, IV = a wedge-shaped group, V = 3–5, VI = a group of 8–12, VII and VIII = a broad band of about four irregular rows. Anterior feet (fig. 14.9.c) with three notopodial lobes and setal lip. In posterior feet (fig. 14.9.d) the superior notopodial lobe is greatly enlarged and lamellate carrying the short dorsal cirrus in a notch at its end, the intermediate notopodial lobe is reduced and the inferior notopodial lobe is pointed. No notopodial falcigers. Neuropodial falcigers (fig. 14.9.e) have long straight blades without distinct tendons at their tips.

Type locality: North Sea.

Records: South West Africa (22/14/s); (Cape 34/23/i, s, 33/25/e, i, s, 33/26/e) and Natal (29/31/i) – fairly common in muddy estuaries.

Distribution: Atlantic from North Sea (e, i), tropical western Africa (i, s) and Massachusetts to Gulf of Mexico (i, s); south to Uruguay; Pacific (California to Panama (e, i)).

Nereis (*Neanthes*) *caudata* Delle Chiaje, 1841
(fig. 14.9.f–j)

Nereis (*Neanthes*) *caudata* Delle Chiaje, 1841; 96, pl. 102 figs. 10, 15; Fauvel, 1923: 347, fig. 135 a–e; Day, 1953: 425; Day, 1960: 324.
Nereis (*Neanthes*) *arenaceodonta*: Pettibone, 1963: 162, figs. 44 i, 45 e.

Length up to 60 mm. Prostomium as broad as long; tentacular cirri rather short. Paragnaths (fig. 14.9.f, g) with group I = a line of 4 points or 8–12 in an oval group, II = a wedge-shaped group, III = an oval group of about 20, IV = a triangular group of about 20, V, VI, VII and VIII form a complete broad band of

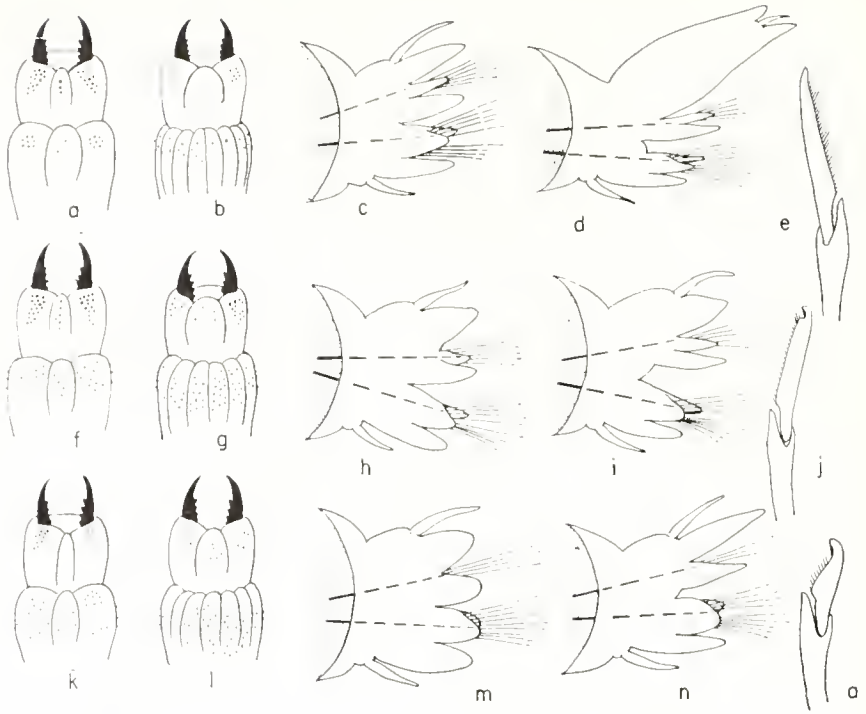

FIG. 14.9. *Nereis succinea*. (A, B) Dorsal and ventral views of proboscis. (C) Anterior foot. (D) Posterior foot. (E) Neuropodial falciger. *Nereis caudata*. (F, G) Dorsal and ventral views of proboscis. (H) Anterior foot. (I) Posterior foot. (J) Neuropodial falciger. *Nereis operta*. (K, L) Dorsal and ventral views of proboscis. (M) Anterior foot. (N) Posterior foot. (O) Neuropodial falciger.

several irregular rows of roughly equal points. Anterior feet (fig.14. 9.h) with three notopodial lobes and a dorsal cirrus about the same length. The superior lobe is triangular and the intermediate notopodial lobe is rather small. In the posterior feet (fig. 14.9.i) the superior lobe of the notopodium is larger and more obviously lamellar. There are no notopodial falcigers. The heterogomph falcigers of the neuropodium are rather fine and their blades are long and almost rectangular with a small hooked tip (fig. 14.9.j).

TYPE LOCALITY: Massachusetts, U.S.A.

RECORDS: Cape (33/18/i, s, 34/22/s) – rare.

DISTRIBUTION: North Atlantic (English Channel (i) to Santander (i) and Massachusetts to Florida (i, s)); Mediterranean; Southern California (s) to Mexico; Tasmania; New Zealand (s).

Nereis (*Neanthes*) *operta* Stimpson, 1856
(fig. 14.9.k–o)

Nereis operta Stimpson, 1856: 292; Day, 1934: 38, fig. 5 a–c.
Nereis polyodonta Schmarda, 1861: 103; Augener, 1918: 187.

Body up to 100 mm. long, usually reddish brown anteriorly. Prostomium as broad as long; tentacular cirri short. Paragnaths (fig. 14.9.k, l) with group I = 1, II = 2–3 close-set rows, III = a rectangular patch, IV = a wedge of close-set points. The oral ring has a continuous band of points which is very broad ventrally so that paragnaths may be seen even when the proboscis is retracted. V is indistinguishable but VI is a distal arc of larger points. Anterior feet (fig. 14.9.m) have two notopodial lobes (sometimes also a third very small setigerous lobe) and a short dorsal cirrus. In posterior feet (fig. 14.9.n) the superior notopodial lobe grows much longer and in most specimens it is longer than the dorsal cirrus. There are no notopodial falcigers. The heterogomph falcigers of the neuropodia have rather blunt-ended blades (fig. 14.9.o).

Type locality: Table Bay, South Africa.

Records: South West Africa (22/14/i to 28/16/s); Cape (from 32/18/i, s to 34/23/e and 33/27/i); Natal (29/31/i); Mocambique (26/32/i).

Distribution: Endemic.

Nereis fusifera Quatrefages, 1865 (? Indeterminate)

Nereis fusifera Quatrefages, 1865: 521.

Prostomium long with long stout palps and long antennae. Tentacular cirri short. Body 30 mm. long for 60–70 segments. Dorsal cirri stout and fusiform. Ventral cirri small. Denticles not seen. Setigerous lobe of notopodium entirely absent. Setae normal.

Type locality: Table Bay, South Africa.

EUNEREIS Malmgren, 1865

Generally similar to the genus *Nereis* but conical chitinous paragnaths restricted to the basal ring; maxillary ring smooth.

Type species: *Nereis longissima* Johnston, 1840.

Note. In some specimens, otherwise identical with *Laeonereis ankyloseta* Day described on p. 303, chitinous paragnaths are present. The distribution is: groups I to IV = all 0, group V = 0, group VI = 1, groups VII and VIII = a single row of three to four. Apart from the smaller number on VII and VIII and the presence of a giant simple seta in posterior neuropodia this species is then very close to *Eunereis hardyi* Monro.

CERATONEREIS Kinberg, 1866

Prostomium with two antennae. Proboscis with conical paragnaths on the maxillary ring but the basal ring is quite smooth, lacking both chitinous paragnaths and soft papillae. Peristomial segment apodous. The first two parapodia uniramous, the rest biramous. Setae include both spinigers and falcigers.

Type species: *Ceratonereis mirabilis* Kinberg, 1866.

Key to Species

1	Prostomium cleft. Notopodial falcigers present in posterior feet	***C. mirabilis***
–	Prostomium not cleft. No notopodial falcigers	2
2	Three notopodial lobes in anterior feet	3
–	Two notopodial lobes in anterior feet	4
3	Falcigers of posterior feet are normal and compound	***C. costae***
–	Two to three notopodial falcigers of posterior feet are enlarged, and the blades are fused to the shafts (fig. 14.10.m)	***C. pachychaeta***
4	Posterior falcigers all normal and compound. Proboscis with group I = 0	5
–	Posterior feet with one or two enlarged simple setae formed by falcigers with the blade fused to the shaft. Proboscis with group I = 2–6 points	***C. erythraeensis***
5	Dorsal lobe of posterior feet reduced or absent; parapodial rami divergent	***C. keiskama***
–	Dorsal lobe of posterior feet normally developed; rami not divergent	***C. hircinicola***

Ceratonereis mirabilis Kinberg, 1866
(fig. 14.10.a–g)

Ceratonereis mirabilis Kinberg, 1866: 170; Gravier, 1901: 172, pl. 11, fig. 42; Fauvel, 1953: 200, fig. 103 a–e.

Body about 30 mm. long with vague brown bars across anterior segments (fig. 14.10.c). Prostomium deeply cleft between the slender antennae; palps elongate; tentacular cirri very long. Paragnaths (fig. 14.10.a, b) with group I = 0, II = a wedge-shaped group, III = a few scattered points, IV = a wedge-shaped group. Dorsum minutely papillose particularly on posterior segments. Anterior feet (fig. 14.10.d) with very long dorsal cirri, and two notopodial lobes of which the superior is slender, sometimes appearing as a mere ventral branch of the dorsal cirrus. Posterior feet (fig. 14.10.e) similar but the superior lobe of the notopodium becomes even smaller. Notosetae include one or two homogomph falcigers (fig. 14.10.f) with long, slightly curved and spinulose blades in posterior feet. Neuropodial falcigers (fig. 14.10.g) are heterogomph and have very long spinulose blades with hooked tips.

Type locality: Brazil.

Records: Mocambique (26 32 i and 23 35 e), Madagascar (i, s) – occasional specimens.

Distribution: Brazil; Gulf of Mexico (i); Red Sea (i); Indo-west-Pacific to Japan (i, s).

Ceratonereis costae (Grube, 1840)
(fig.14.10.h–l)

Nereis costae Grube, 1840: 74.
Ceratonereis costae: Fauvel, 1923: 349, fig. 136 a–f.

Length up to 80 mm. Prostomium as broad as long; tentacular cirri of normal length. Paragnaths (fig. 14.10.i, j) with group I = 0–1, II = a double row, III = 3 in a triangle, IV = a wedge-shaped group. The most anterior feet have only two notopodial lobes and a slightly longer dorsal cirrus, but on about 10 feet from about the 7th to 17th (fig. 14.10.h) a small but distinct intermediate lobe is present. Setigerous lobe of the neuropodium with a long presetal lip and a stouter postsetal lip. Posterior feet (fig. 14.10.l) with all the lobes longer and more pointed. No notopodial falcigers. Only a few heterogomph falcigers with long blades in the neuropodia (fig. 14.10.k) and in posterior feet two of them are enlarged but usually lose their blades.

Type locality: Italy.

Records: Mocambique (26/32/i, 24/34/s and 23/35/e); Madagascar (i, s) – occasional specimens on muddy sandbanks.

Distribution: North Atlantic (Santander, Madeira, Canary Is., Morocco (s), Senegal (i, s)); Mediteranean (s); Red Sea; Indo-west-Pacific (i, s).

Ceratonereis pachychaeta Fauvel, 1918
(fig. 14.10.m–n)

Ceratonereis pachychaeta Fauvel, 1918: 506; Fauvel, 1919: 403, pl. 15 figs. 22–25, text-fig. 8.

Body up to 45 mm. long. Prostomium hexagonal; tentacular cirri of normal length. Paragnaths of group I = 0–1, II = one to two rows of 4–10, III = 2–3 in line, IV = 4–6 in a triangle. Anterior feet with three subequal notopodial lobes and a longer dorsal cirrus. In posterior feet the notopodia and neuropodia diverge, the setigerous lobe of the notopodium is small or vestigial and the other two notopodial lobes are long and pointed. No notopodial falcigers. Neuropodial falcigers of anterior feet have straight or even convex blades, but posteriorly they become more hooked with a distinct tendon attached to the tip (fig. 14.10.n). In these posterior feet there are also two to three giant falcigers with the blades partly fused to their shafts (fig. 14.10.m).

Type locality: Djibouti and Madagascar.

Records: Madagascar (i) – a single record.

Distribution: Suez, Red Sea, Indo-west-Pacific (i, s).

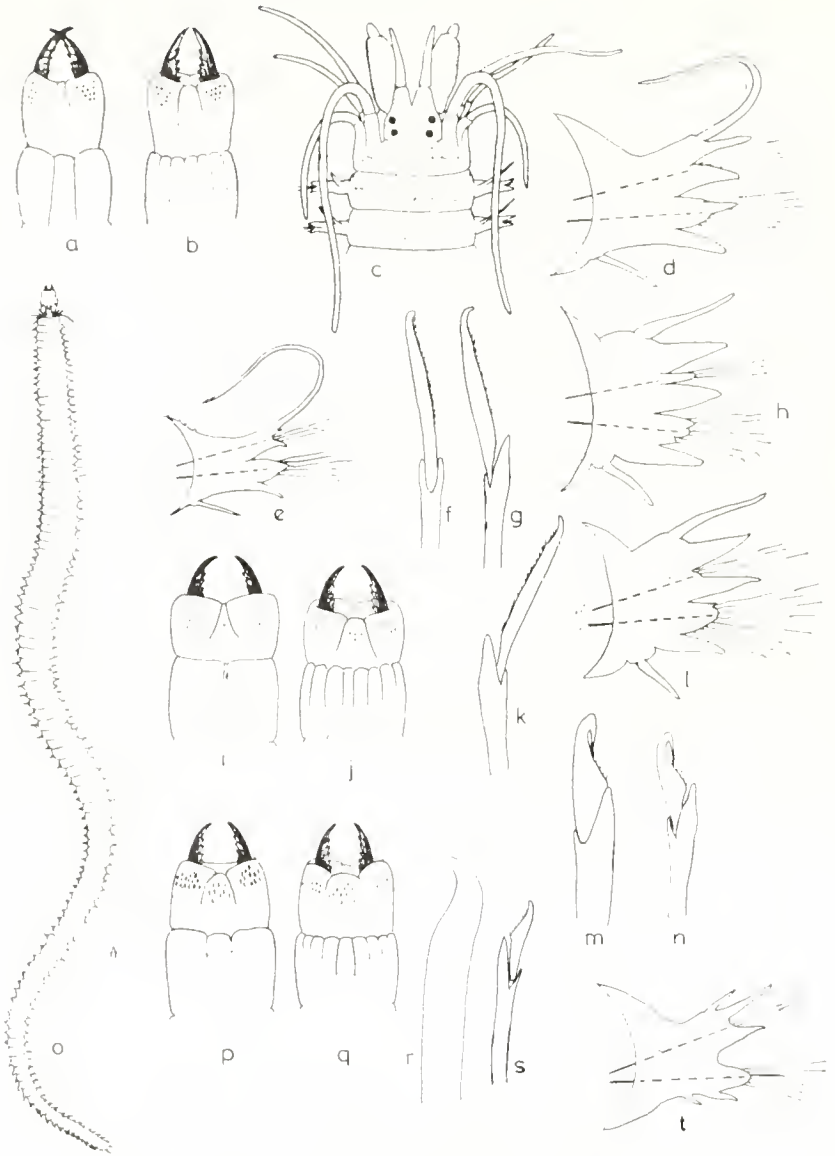

Fig. 14.10. *Ceratonereis mirabilis*. (A, B) Dorsal and ventral views of proboscis. (C) Head. (D) Anterior foot. (E) Posterior foot. (F) Notopodial falciger. (G) Neuropodial falciger. *Ceratonereis costae*. (H) Anterior foot. (I, J) Dorsal and ventral views of proboscis. (K) Neuropodial falciger. (L) Posterior foot. *Ceratonereis pachychaeta* (after Fauvel, 1919). (M) Giant simple falciger. (N) Normal neuropodial falciger. *Ceratonereis erythraeensis*. (O) Entire worm (twice life size). (P, Q) Dorsal and ventral views of proboscis. (R) Giant simple seta. (S) Normal neuropodial falciger. (T) Posterior foot.

Ceratonereis erythraeensis Fauvel, 1918
(fig. 14.10.o–t)

Ceratonereis erythraeënsis Fauvel, 1918: 505; Fauvel, 1919: 407, pl. 16, figs. 26–30, 42–47.

Body (fig. 14.10.o) slender, up to 160 mm. long. Prostomium broader than long; antennae short; tentacular cirri fairly long. Paragnaths (fig. 14.10.p, q) with group I = a group of 2–6, II = a double row of about 10, III = a transverse patch of about 18, IV = a wedge of 12–15. All paragnaths are elongate cones. Anterior feet with two notopodial lobes and a short dorsal cirrus of the same length; posterior feet (fig. 14.10.t) similar but the lobes are more pointed. No notopodial falcigers. Neuropodial falcigers (fig. 14.10.s) have short blades without tendons and in posterior feet one or two of them are enlarged with the blades fused to the shafts so that they form simple hooks (fig. 14.10.s).

Type locality: Madagascar.

Records: South West Africa (26/15/i); Cape (32/18/e and 33/18/i) to Natal (29/31/i) and Mocambique (23/35/e, s).

Distribution: Indian Ocean (Djibouti (i), Madagascar (e) and W. Australia (e)); Japan.

Ceratonereis keiskama Day, 1953
(fig. 14.11.a–f)

Ceratonereis keiskama Day, 1953: 426, fig. 5 a–f.

A small estuarine species, 10–20 mm. long. Prostomium (fig. 14.11.a) broadly triangular; palps stout; tentacular cirri fairly short. Paragnaths (fig. 14.11. b, c) with group I = o, II = a double row, III = an oval patch, IV = a long triangle. Anterior feet (fig. 14.11.d) with two notopodial lobes and a longer dorsal cirrus. In posterior feet (fig. 14.11.e) the superior notopodial lobe is small or vestigial and there is a marked gap between the notopodium and neuropodium. No notopodial falcigers. Neuropodial falcigers (fig. 14.11.f) with rather long blades.

Type locality: Keiskama Estuary, Cape, South Africa.

Records: Cape (32/18/e) to Natal (28/32/e) – very common in water of low salinity at the top of estuaries.

Distribution: Endemic.

Ceratonereis hircinicola (Eisig, 1870)

Nereis hircinicola Eisig, 1870: 103.
Ceratonereis hircinicola: Fauvel, 1923: 350, fig. 136 g–n.

Head and anterior segments dirty brown. Body up to 110 mm. long. Prostomium broadly triangular; palps short and stout; tentacular cirri fairly short except for the posterior dorsal one. Paragnaths with group I = o, II = 2–3 oblique rows of about 30, III = a roughly square patch of about 20, IV = a triangular group of

about 30. All paragnaths small and conical. Anterior feet with two notopodial lobes and a slightly longer dorsal cirrus. Setigerous lobe of neuropodium with well marked presetal and postsetal lips. Ventral cirrus short. Posterior feet essentially similar with subequal notopodial lobes, and without a marked gap between notopodium and neuropodium. No notopodial falcigers; spinigers of posterior notopodia with short blades. Heterogomph falcigers of the neuropodia with straight blades (in South African but not Mediterranean forms – see Fauvel, fig. 136 n).

Type locality: Mediterranean.

Records: Natal (28/32/e); Madagascar (s).

Distribution: Mediterranean, Madagascar.

LEONNATES Kinberg, 1866

Prostomium with two antennae. Basal ring of proboscis either smooth or beset with soft papillae; the maxillary ring has separate conical paragnaths. Peristomial segment apodous. The parapodia are biramous after the first two. Setae include normal spinigers and falcigers which have coarsely serrated blades.

Type species: *Leonnates indicus* Kinberg, 1866.

Key to Species

1 Prostomium notched in front. (No chitinous paragnaths on group III. Posterior falcigers with knobbed ends to the blades (fig. 14.11.i).) . . . . . ***L. persica***
– Prostomium not notched 2
2 Falcigers with stout, abruptly truncate ends to the blades (fig. 14.11.q) . ***L. decipiens***
– Falcigers with slightly hooked ends to the blades (fig. 14.11.t) . . . ***L. jousseaumei****

Leonnates persica Wesenberg-Lund, 1949
(fig. 14.11.g–m)

Leonnates persica Wesenberg-Lund, 1949: 275, figs. 11–12; Day, 1957: 76, fig. 3 l.

Body stout, up to 40 mm. long. Prostomium (fig. 14.11.j) notched in front and as broad as long with four large eyes and a pair of slender antennae, large palps and long tentacular cirri. Basal ring of proboscis (fig. 14.11.k, l) with a double row of soft papillae dorsally and four irregular rows ventrally; maxillary ring with very few paragnaths; group I = 0, II = 2–3, III = 0, IV = 3–4. Anterior feet (fig. 14.11.g) have short dorsal cirri and three notopodial lobes, the intermediate one being slightly shorter than the others. In the neuropodia, the setigerous lobe has a presetal and a post-setal lobe of equal size. Posterior feet (fig. 14.11.m) are more elongate; the dorsal cirrus is still small, the intermediate lobe of the notopodium now obviously smaller than adjacent ones and in the neuropodium the postsetal lip of the setigerous lobe is obviously longer than the presetal one. The notosetae are homogomph spinigers throughout. The neurosetae of anterior feet are also homogomph and show a complete gradation from spinigers to falcigers, the latter having

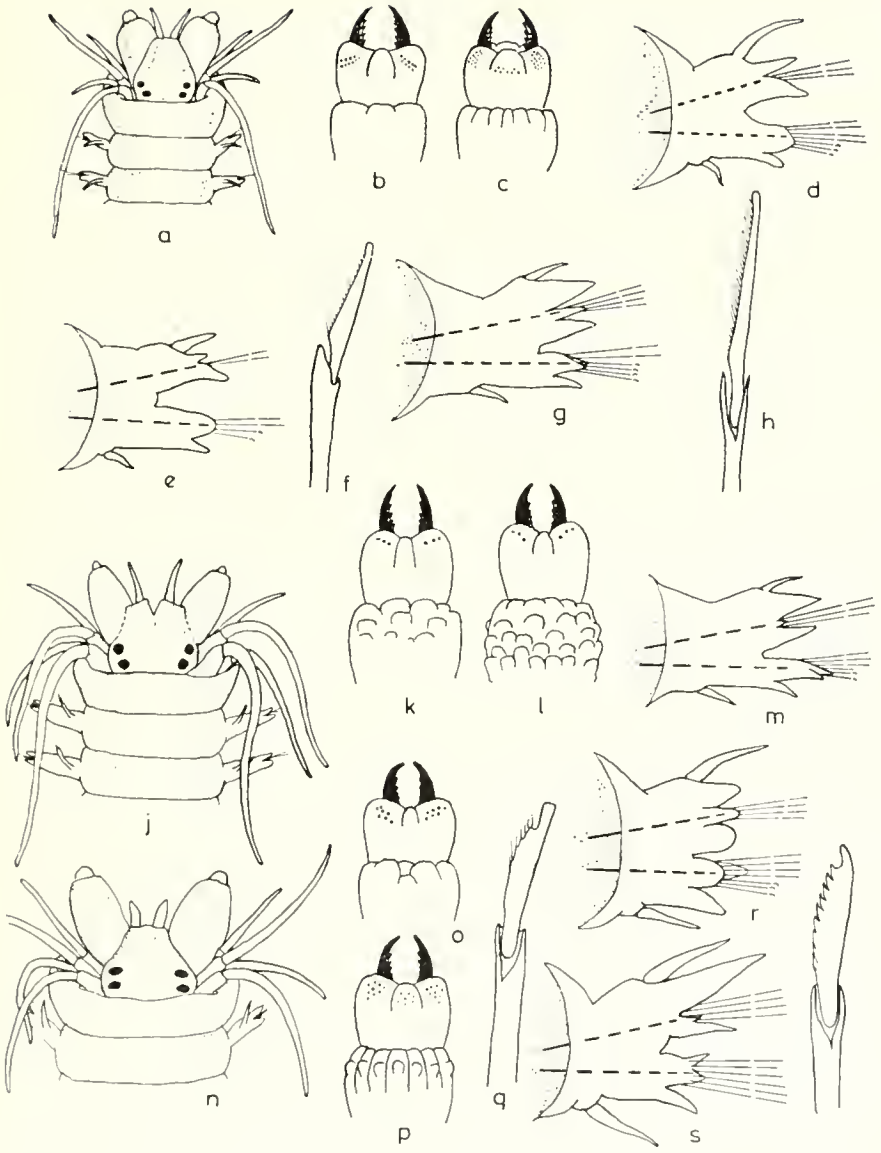

FIG. 14.11. *Ceratonereis keiskama*. (A) Head. (B, C) Dorsal and ventral views of proboscis. (D) Anterior foot. (E) Posterior foot. (F) Neuropodial falciger. *Leonnates persica*. (G) Anterior foot. (H) Falciger. (J) Head. (K, L) Dorsal and ventral views of proboscis. (M) Posterior foot. *Leonnates decipiens*. (N) Head. (O, P) Dorsal and ventral views of proboscis. (Q) Posterior falciger. (R) Anterior foot. (S) Posterior foot. *Leonnates jousseaumei* (after Fauvel, 1930). (T) Falciger.

long straight denticulate blades with slightly knobbed tips (fig. 14.11.h). In posterior feet the neurosetae are similar but the falcigers are now more numerous.

TYPE LOCALITY: Persian Gulf.

RECORDS: Mocambique (23/35/e) – a few specimens only.

DISTRIBUTION: Persian Gulf (s).

Leonnates decipiens Fauvel, 1929
(fig. 14.11.n–s)

Leonnates decipiens Fauvel, 1929: 180; Fauvel, 1930: 20, fig. 5 f–m; Fauvel, 1953: 171, fig. 87.

Body stout, up to 300 mm. long by 2 mm. with 90 segments. Prostomium (fig. 14.11.n) broader than long; palps stout and as long as the antennae. Basal ring of proboscis (fig. 14.11.o, p) with rather indistinct soft papillae; group V = 0, VI = one large square papilla, VII and VIII = a single row. Chitinous paragnaths of maxillary ring with group I = 0, II = an oblique row, III = a transverse group, IV = a triangular group. Anterior feet (fig. 14.11.r) with three notopodial lobes and a dorsal cirrus of the same length; neuropodium with a setigerous lobe having the presetal lip shorter than the postsetal one. Posterior feet (fig. 14.11.q) with the superior lobe of the notopodium longer than the dorsal cirrus; in the neuropodium the postsetal lip of the setigerous lobe is long and slender and equal to the inferior lobe. Notosetae are homogomph spinigers throughout. Neurosetae are homgomph spinigers and falcigers, the latter having convex spinous blades with expanded truncate tip (fig. 14.11.s).

TYPE LOCALITY: Gulf of Manaar.

RECORDS: Mocambique (26/32/i) – a few specimens.

DISTRIBUTION: Senegal (i); Congo (i); Suez; Gulf of Manaar.

Leonnates jousseaumei Gravier, 1901

Leonnates jousseaumei Gravier, 1901: 160, pl. 11 figs. 34–37, text-figs. 162–165; Fauvel, 1953: 169, fig. 86 d–f.

Body up to 80 mm. long with 100 setigers; colour reddish brown. Proboscis with conical chitinous paragnaths on the maxillary ring as follows: Group I = 0; II = 6–8; III = 6–7; IV = 8. Oral ring with soft papillae arranged as follows; V = 0; VI = a rosette of 6–8; VII and VIII = two to three irregular rows. Palpostyles small; tentacular cirri short, the longest not reaching setiger 4. All feet with slender dorsal cirri hardly longer than the parapodial lobes which are markedly pointed throughout. Anterior feet with three notopodial lobes and a neuropodium with pointed presetal and postsetal lips to the setigerous lobe. Posterior feet similar but the setigerous lobe of the notopodium is slender and the lips of the setigerous lobe of the neuropodium are reduced. The setae are all homogomph. The notosetae are all spinigers in anterior feet, but include a few falcigers as well in

posterior feet. The neurosetae include both spinigers and falcigers in all feet. Individual falcigers have boldly serrated blades ending in a curved and pointed terminal tooth.

Type locality: Obock, Gulf of Aden.

Records: Madagascar (s).

Distribution: Tropical Indian Ocean.

PSEUDONEREIS Kinberg, 1866

Prostomium with two antennae. Paragnaths as transverse bars on group VI and conical points elsewhere, sometimes arranged to form pectinate rows on II, III and IV. Peristome apodous. Parapodia biramous except for the first two which are uniramous. Superior lobe of the notopodium expanded in posterior feet. Setae are compound and include both spinigers and falcigers.

Type species: *Pseudonereis gallapagensis* Kinberg, 1866.

Key to Species

1 Group VI as a single bar; V as a single point; VII and VIII as two to three rows
P. variegata

– Group VI with 6–10 short bars in a row; V = 0; VII and VIII as a single row
P. anomala

Pseudonereis variegata (Grube, 1857)
(fig. 14.12.a–f)

Nereilepas variegata Grube, 1857: 164.
Nereis (Mastigonereis) variegata: McIntosh, 1904: 37, pl. 1 figs. 6–10, pl. 2 figs. 11, 12.
Pseudonereis gallapagensis Kinberg, 1866: 174; Fauvel, 1953: 215, fig. 110 a–c.

Body reaching 150 mm. by 8 mm.; colour dark green. Ovigerous females bluish. Prostomium (fig. 14.12.a) a broad inverted T with large bulbous palps. Proboscis (fig. 14.12.b, c) with group I = 0–1, II = a double row of 12–15, III = three well marked rows of 12–24, IV = a wedge of 15–20, V = 1, VI = a single large transverse bar, VII and VIII = 2–3 irregular rows. Paragnaths in groups II, III and IV arranged in comb-like rows but individual points do not join basally. Anterior feet (fig. 14.12.d) with two rounded notopodial lobes and a longer dorsal cirrus. In posterior feet (fig. 14.12.f) the superior notopodial lobe is large, flattened and lamellate carrying the small dorsal cirrus at its truncate end. Notosetae are homogomph spinigers throughout. Neuropodial falcigers stout with short, faintly hooked blades (fig. 14.12.e).

Type locality: Chile and Peru.

Records: South West Africa (21/13/i to 26/15/i) around the Cape (34/18/i) to Natal (29/31/i) and Mocambique (26/32/i) – abundant under algae and barnacles on all rocky shores.

Distribution: Circumtropical (i).

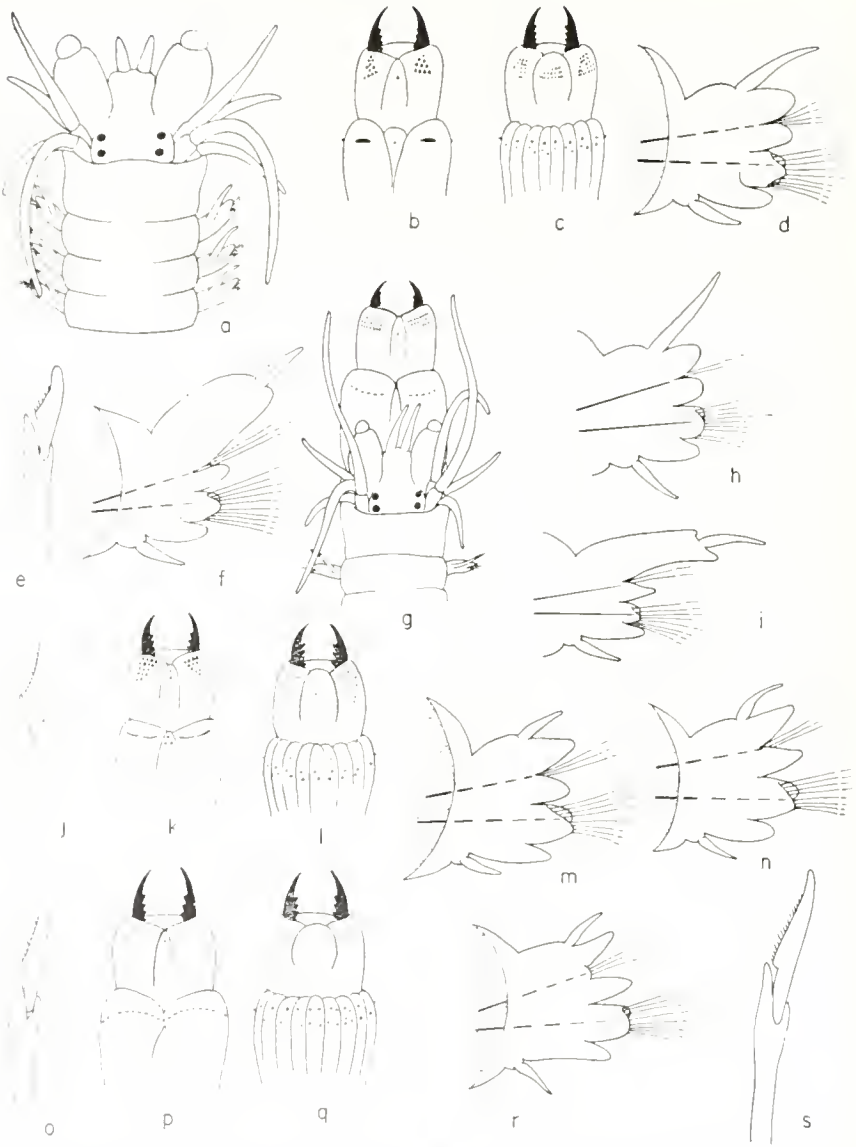

FIG. 14.12. *Pseudoneresis variegata*. (A) Head. (B, C) Dorsal and ventral views of proboscis. (D) Anterior foot. (E) Falciger. (F) Posterior foot. *Pseudoneresis anomala* (after Gravier, 1901). (G) Head and proboscis. (H) Anterior foot. (I) Posterior foot. (J) Falciger. *Perinereis tamaulica*. (K, L) Dorsal and ventral views of proboscis. (M) Posterior foot. (N) Falciger. *Perinereis nuntia vallata*. (O, P) Dorsal and ventral views of proboscis. (Q) Posterior foot. (R) Falciger.

Pseudonereis anomala Gravier, 1901
(fig. 14.12.g–j)

Pseudonereis anomala Gravier, 1901 : 191, pl. 12 figs. 50–52, text-figs. 194–202 ; Fauvel, 1953 : 217, fig. 110 e–g.

Body up to 65 mm. long. Prostomium (fig. 14.12.g) a broad inverted T. Antennae continguous, rather large ; palpophores rather long. Paragnaths with group I = 1–2 in line, II = 4 comb-like rows of points, III = 4 comb-like rows, IV = a series of comb-like rows, V = 0, VI = 6 short bars in a transverse row, VII and VIII = a single row of about 14 points. Anterior feet (fig. 14.12.h) with two equal notopodial lobes and a long dorsal cirrus ; in posterior feet (fig. 14.12.i) the superior notopodial lobe is flattened and elongate, carrying the dorsal cirrus at its obliquely truncate tip. Neuropodial falcigers (fig. 14.12.j) with short blades.

Type locality : Red Sea.

Records : Madagascar (i) – a single record.

Distribution : Suez, Red Sea (i) and tropical Indian Ocean (i, s) to W. Australia (i).

PERINEREIS Kinberg, 1866

Prostomium with two antennae. Paragnaths include both transverse bars (on group VI) and conical points elsewhere. Peristomial segment apodous. Parapodia biramous except for the first two which are uniramous. The setae are compound and include both spinigers and falcigers.

Type species : *Perinereis novaehollandiae* Kinberg, 1866 (= *Nereis amblyodonta* Schmarda, 1861).

Key to Species

1 Only one bar on group VI 2
– Two bars on group VI ; three points on V . . . . . *P. vancaurica*
– A continuous row of bars across V and VI . . . . . *P. nuntia*
2 Bar on VI very short ; I = 1 ; V = 1. (Dorsal lobe not elongate in posterior feet) *P. falsovariegata*
– Bar on group VI of normal length 3
3 Group V = 0 ; 1 = 1–3 in line. (Dorsal cirrus and dorsal lobe of posterior feet both long) . . . . . *P. capensis*
– Group V = 1–3 in a triangle 4
4 Group I = 1–3 in line. Dorsal lobe of posterior feet not expanded . . *P. cultrifera*
– Group I = 6–12 in an irregular group. Dorsal lobe of posterior foot enlarged bearing the dorsal cirrus on its superior distal margin . . . . . *P. nigropunctata*

Perinereis vancaurica (Ehlers, 1868)
(fig. 14.12.k–o)

Nereis vancaurica Ehlers, 1868: p. xx.
Perinereis horsti Gravier, 1901: 182, pl. 11, fig. 47, text-figs. 182–4.
Perinereis vancaurica: Fauvel, 1932: 103; Fauvel, 1953: 205, fig. 105 f–g.

Body up to 80 mm. long. Prostomium broadly triangular; antennae tapered, tentacular cirri short. Paragnaths (fig. 14.12.k, l) with group I = 1–2, II = 2 curved rows, III = a square group, IV = a triangular area of numerous points, V = 3 large points in a triangle, VI = 2 narrow, transversely elongate bars, VII and VIII = 2–3 irregular rows. Anterior feet (fig. 14.12.m) with two notopodial lobes and a short dorsal cirrus of the same length. Inferior lobe of the neuropodium short. Posterior feet (fig. 14.12.n) with slightly longer lobes. Notosetae are homogomph spinigers with short blades. Heterogomph falcigers of the neuropodium with very straight blades (fig. 14.12.o).

Type locality: Vancauri (Nicobar Is.).

Records: Mocambique (23/35/e) – a single record.

Distribution: Red Sea and Indo-west-Pacific (i).

Perinereis nuntia vallata (Grube, 1857)
(fig. 14.12.p–s)

Nereis vallata Grube, 1857: 159.
Perinereis nuntia var. *vallata*: Fauvel, 1932: 110; Fauvel, 1953: 212, fig. 109 a–g.

Body up to 120 mm. long. Prostomium broadly triangular; palps large, tentacular cirri short. Paragnaths (fig. 14.12.p, q) with group I = 1–3 in line, II = a small triangular group of a few points, III = an oval patch, IV = a wedge-shaped group, V = 1, VI = a transverse row of 8–15 short bars, VII and VIII = 2–3 irregular rows. Anterior feet with two notopodial lobes, sometimes with a rudimentary setigerous lobe (as well) and a dorsal cirrus of the same length. Posterior feet (fig. 14.12.r) similar but with longer lobes. Notosetae are homogomph spinigers; neuropodial falcigers (fig. 14.12.s) have straight blades without any sign of a tendon. Colour dull brown fading posteriorly.

Type locality: Valparaiso, Chile.

Records: South West Africa (22/14/i and 26/15/i), Cape (30/17/e to 32/28/i); Mocambique (23/35/e) – fairly common in sand under stones near high tide mark.

Distribution: Red Sea; Indian Ocean; S. Pacific; New Zealand (e, i); Chile (i).

Perinereis falsovariegata Monro, 1933
(fig. 14.13.a–f)

Perinereis falsovariegata Monro, 1933: 492, figs. 4–7.

Body up to 50 mm. long with a pattern of brown markings on the head and anterior segments (fig. 14.13.a). Prostomium as broad as long. Paragnaths (fig. 14.13.b, c) with group I = 1, II = 2–3 rows, III = about 20 points in an oval, IV = a triangular group of larger and smaller points, V = 1 large point, VI = a very short bar, VII and VIII = 2–3 irregular rows. Anterior feet (fig. 14.13.e) with two notopodial lobes and a slightly longer dorsal cirrus. In posterior feet (fig. 14.13.f) the superior notopodial lobe is longer and carries a long dorsal cirrus. Notosetae are homogomph spinigers; neuropodial falcigers have hooked blades without a trace of a tendon (fig. 14.13.d).

Type locality: Still Bay, South Africa.

Records: Cape (33/18/i to 33/26/e, i) to Natal (29/31/i) and Mocambique (26/32/i) – fairly common among algae on sandy rocks.

Distribution: Endemic.

Perinereis capensis (Kinberg, 1866)
(fig. 14.13.g–m)

Arete capensis Kinberg, 1866: 174.
Perinereis capensis: Monro, 1933: 495, figs. 7–11; Day, 1934: 42, fig. 8 a–c.

Body brown anteriorly and up to 70 mm. long. Prostomium (fig. 14.13.i) a broad inverted T with large, compressed palpophores each with a small terminal button. Antennae tapered, tentacular cirri fairly short. Proboscis (fig. 14.13.j, k) with group I = 2–3 in a row, II = a wedge of 12–15, III = an oval group of about 10, IV = a triangle of 15, V = 0, VI = a single large bar, VII and VIII = 2 irregular rows of larger and smaller points. Anterior parapodia (fig. 14.13.g) have two to three notopodial lobes for the small intermediate lobe is fused to the large inferior notopodial lobe. Dorsal cirrus twice as long as the superior notopodial lobe from whose upper surface it arises. In posterior feet (fig. 14.13.h) the base of the superior notopodial lobe is enlarged carrying the dorsal cirrus with it. Neuropodia have a short, pointed postsetal projection to the setigerous lobe throughout. In the heteronereid stage the lobes of the feet are expanded and the bases of the cirri have lamellae (fig. 14.13.l). Notosetae are homogomph spinigers throughout. Neurosetae include both homogomph and heterogomph spinigers and heterogomph falcigers with almost straight apices (fig. 14.13.m).

Type locality: "Cape of Good Hope".

Records: False Bay (34/18/s) to Natal (27/32/i) – common on rocky shores.

Distribution: Tropical Indian Ocean (e, i); Senegal (i).

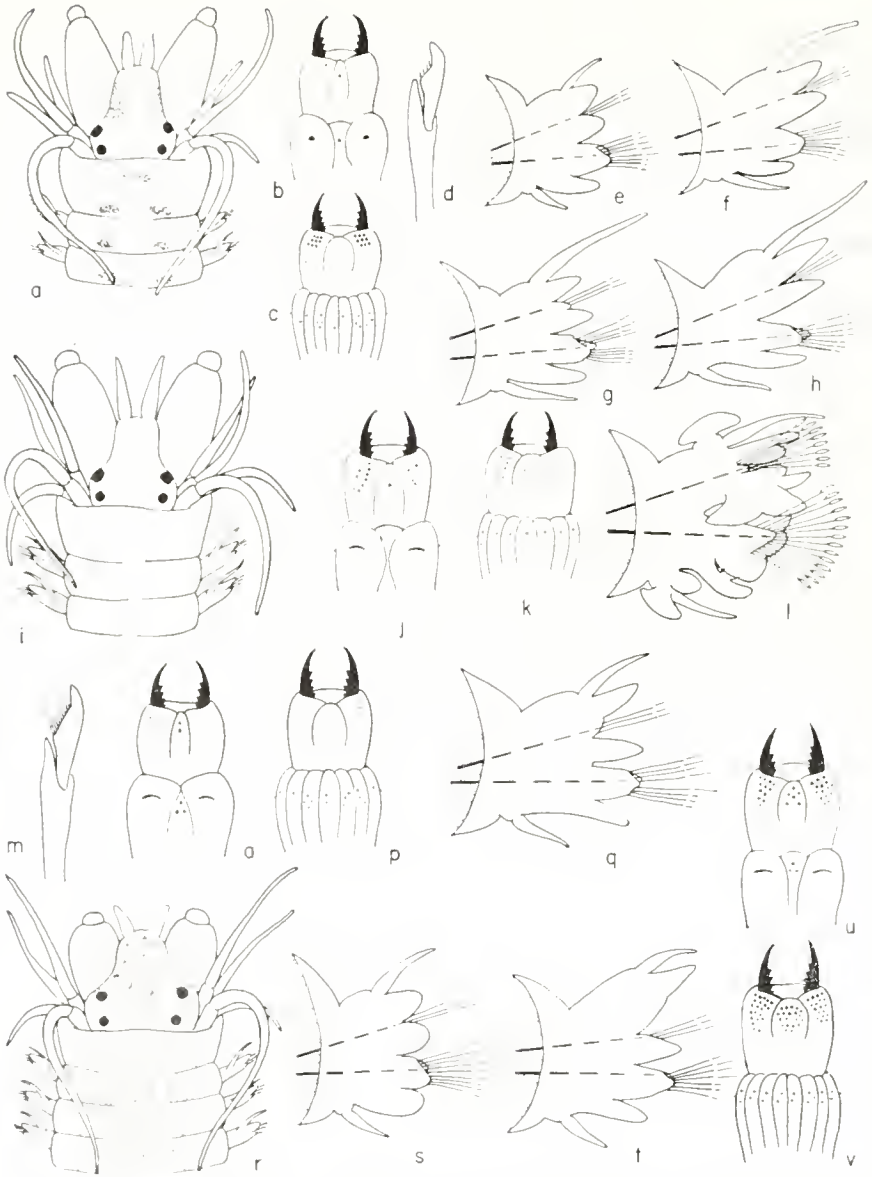

FIG. 144 *f*. *Perinereis falsocariegata*. (A) Head. (B, C) Dorsal and ventral views of proboscis. (D) Falciger. (E) Anterior foot. (F) Posterior foot. *Perinereis capensis*. (G) Head. (H, I) Dorsal and ventral views of proboscis. (J) Anterior foot. (K) Posterior foot. (L) Foot of heteronereid form. (M) Falciger. *Perinereis cultrifera*. (O, P) Dorsal and ventral views of proboscis. (Q) Posterior foot. *Perinereis nigropunctata*. (R) Head. (S, T) Dorsal and ventral views of proboscis. (U) Anterior foot. (V) Posterior foot.

Perinereis cultrifera (Grube, 1840)
(fig. 14.13.o–q)

Nereis cultrifera Grube, 1840: 74.
Perinereis cultrifera: Fauvel, 1923: 352, fig. 137.

Body up to 250 mm. long with 125 segments. Prostomium broadly triangular; palps large, tentacular cirri rather long and slender. Paragnaths (fig. 14.13.o, p) with group I = 1–3 large points in a line, II = a few points in a triangle, III = an oval patch, IV = a wedge, V = 3 large points in a triangle, VI = a transverse bar, VII and VIII = 2–3 rows of equal points. Anterior feet with two notopodial lobes and a short dorsal cirrus. In posterior feet (fig. 14.13.q) the lobes become more pointed but the cirrus hardly increases in length. Neurpoodial falcigers with fairly straight blades.

Type locality: Naples.

Records: Cape (34/18/i and 26/33/i); Natal (30/30/i and 29/31/i); Madagascar (i, s) – occasional specimens on rocky shores.

Distribution: N.E. Atlantic from the North Sea (i) to Senegal (i, s); Mediterranean and tropical Indo-west-Pacific (i).

Perinereis nigropunctata (Horst, 1889)
(fig. 14.13.r–v)

Nereis nigro-punctata Horst, 1889: 171.
Perinereis majorii Southern, 1921: 595, pl. 23, fig. 10, text-figs. 7, 8.
Perinereis nigropunctata: Fauvel, 1932: 107; Day, 1957: 84; Fauvel, 1953: 210, fig. 107 b-f.

Body 50–60 mm. long with three rows of brown marks and a V on the prostomium. Tentacular cirri short (fig. 14.13.r). Paragnaths (fig. 14.13., u, v) with group I = a patch of 6–12, II = 2–3 rows, III = a patch of 15–20, IV = a wedge of about 20, V = 3 in a triangle, VI = a transverse bar, VII and VIII = 2 irregular rows. Anterior feet (fig. 14.13.s) with two notopodial lobes and a rudimentary fillet between them. Posterior feet (fig. 14.13.t) with the superior lobe enlarged and elongated bearing the dorsal cirrus on its upper distal margin.

Type locality: Malaya.

Records: Mocambique Island (i) and Madagascar (i) – rare.

Distribution: Red Sea (i) and tropical Indo-west-Pacific (e, i).

Family **NEPHTYIDAE** Grube, 1850

Body elongate with numerous rectangular segments and usually white in colour. Prostomium small and pentagonal with four antennae. Cephalic eyes sometimes visible through the skin. Proboscis large, very muscular, with a papillose sheath and armed with a pair of internal jaws. Peristome with reduced parapodia. Normal body segments with biramous parapodia; the two rami are widely separated and there is usually an interramal branchia between them. Both the notopodium and the neuropodium has a setigerous lobe, a presetal lamella and a postsetal lamella and two fans of simple setae. The preacicular row consists of barred or laddered capillaries and the postacicular row consists mainly of long capillaries minutely denticulate on one side but forked setae may also be present. A notopodial cirrus is present at the origin of the branchia and a ventral cirrus is present below the neuropodium.

Records from southern Africa

Nephtys (*Aglaophamus*) *dibranchis* Grube . .	45Ni, Nsd
Nephtys (*Aglaophamus*) *lyrochaeta* Fauvel . .	26Ai
Nephtys (*Aglaophamus*) *macroura* Schmarda .	50Csd, 55Ca
Nephtys (*Micronephthys*) *ambrizettana* Augener .	26Ai
Nephtys (*Micronephthys*) *sphaerocirrata* Wesenberg-Lund	50Cs
Nephtys (*Nephtys*) *capensis* Day . . .	41Ci, 45Ni, 50Cs
Nephtys (*Nephtys*) *hystricis* McIntosh . .	36Ps
Nephtys (*Nephtys*) *hombergi* Savigny . .	15Cs, 16Wi, 26Wis, 31As, 41Ci, 50Csd
Nephtys (*Nephtys*) *paradoxa* Malmgren . .	50Cd, ?55Ca,
Nephtys (*Nephtys*) *tulearensis* Fauvel . .	27Mi, 40PiNi, 41Ci, 50Cs

BIOLOGICAL NOTES

The nephtyids are typical inhabitants of sandy mud. They burrow actively by means of an eversible proboscis which can be distended by coelomic fluid. The parapodia are flattened against the sides of the rectangular body and the gills are protected in the gap between the notopodium and the neuropodium. Eyes which are well developed in the larvae, are often lost in the adult or sink below the surface of the skin and in some cases are most easily seen through the roof of the mouth. Nephtyids burrow rapidly and when dug out they are active swimmers. They live in all grades of sand or sandy mud. *Nephtys capensis*, for example, lives in clean sand and may even be found on surf beaches; *N. hombergi* lives in sandy mud and is common in dredgings in many parts of the world while *N. macroura* is a cold water species living in soft mud down to 1,000 metres or more.

The alimentary canal rarely contains any recognisable food remains and is certainly never packed with sand as would be expected if *Nephtys* were a detritus feeder. Until recently it was thought that all nephtyids were carnivores but they

occur in such large numbers on certain shores that a doubt has arisen. They may be omnivores but they must be very selective in their diet.

THE MAIN DIAGNOSTIC CHARACTERS

Recent reviews of the family will be found in Fauvel (1923) and Hartman (1950). The family is a very homogeneous one and the 65 recognisable species are usually placed in the one genus *Nephtys*. Hartman recognises three genera namely *Nephtys* Cuvier, 1817, *Aglaophamus* Kinberg, 1866 and *Micronephthys* Friedrich, 1939, distinguished by the character of the gills. In the present work these are regarded as subgenera.

The main diagnostic characters are the number of rows of papillae on the proboscis, the nature of the branchiae, the shapes of the parapodial lamellae and to a less extent the types of setae present.

The head. The prostomium is liable to vary in shape with the eversion or retraction of the proboscis and its exact shape is of doubtful value. The two pairs of antennae are small and do not vary greatly in length. A pair of eyes is present on the brain. They are often pale and as the skin thickens they may become invisible.

The proboscis (fig. 15.1.d). This is a large muscular organ with a pair of nodular chitinised plates (*jaws*) (fig. 15.1.b) internally, a circle of bilobed papillae at the distal end and 14 or 22 rows of tapered papillae on the surface. Sometimes there is also a larger mid-dorsal papilla between the ring of biloped papillae and the rows of tapered papillae. The bilobed papillae are not of systematic importance, but the others provide useful characters and if the proboscis is not everted it should be dissected. A longitudinal slit is made through the body wall and proboscis sheath; the oesophagus and retractor muscles of the proboscis are then cut across and the proboscis pushed forwards. When it is in its normally everted position the proboscis sheath with its papillae will be stretched over it and may be examined. To examine the jaws cut through the thick muscle of the proboscis.

The peristomium. This has a pair of reduced parapodia and the degree of development of the dorsal and ventral cirri is a useful character.

Parapodia and branchiae. The feet are biramous and the two rami are widely separated with the *interramal branchia* (= *interramal cirrus* Hartman) between them. Each ramus consists of a stout setigerous lobe whose apex may be rounded, pointed or bilobed. This is a dubious character as it must be affected by the degree of contraction. Each setigerous lobe has a low *presetal lamella* on its anterior face and a larger *postsetal lamella* on its posterior face. The size and shapes of these lamellae provide most useful characters. The branchiae arises just below the apex of the notopodium and bears a *dorsal cirrus* or *notopodial cirrus* at its base. The branchia itself may be lamellar or cirriform and if the latter it may coil in two ways. In the subgenus *Nephtys* it bends inwards at first and then outwards, i.e. it is *recurved*. In the subgenus *Aglaophamus* (ag. 15.1.c) it bends outwards at first and then downwards and inwards, i.e. it is *involute*. Occasionally the gill does not bend at all and projects straight out. In the subgenus *Micronephthys* the gill is entirely absent. Apart from these differences the segment on which the first gill appears is important.

The setae. Each ramus of the parapodium bears two fan-shaped rows of simple setae and those on the notopodium are identical with those on the neuropodium. The anterior or pre-acicular row are all barred or laddered (fig. 15.1.f) due to regular changes in the consistency of the seta. The posterior or post-acicular row of setae include three types: (a) The most numerous are long capillaries with an oblique breaking plane at the base and a rather flattened blade with transverse rows of minute denticles on one margin (fig. 15.1.e). (b) There may be a few *geniculate setae* with the blade sharply bent on the shaft and coarsely toothed on the convex margin. (c) In some species of the subgenera *Aglaophamus* and *Micronephthys* there are two to three *forked setae* with short shafts and two lyriform prongs which are spinulose on their inner margins (fig. 15.1.h).

NEPHTYS Cuvier, 1817

Body elongate and depressed with numerous segments. Prostomium small and pentagonal with four antennae and sometimes a pair of subdermal eyes. Proboscis stout and muscular with a pair of chitinous jaws internally, a ring of bilobed terminal papillae and 14 or 22 rows of papillae on the surface. Parapodia biramous with divergent setigerous lobes each bearing delicate anterior and posterior lamellae. Two rows of simple setae, the anterior row consisting of laddered capillaries and the posterior row consisting of long capillaries minutely denticulate on one margin though geniculate or forked setae may also be present. Interramal branchiae present or absent; if present they arise from the notopodia and coil between the parapodail lobes.

Type species: *Nereis ciliata* Müller, 1789.

Key to Subgenera and Specis

1 Branchiae involute, coiling outwards then downwards (fig. 15.1.c) (subgenus ***AGLAOPHAMUS***) 2
– Branchiae recurved, coiling downwards then outwards (fig. 15.2.g) (subgenus ***NEPHTYS***) 5
– Branchiae absent (fig. 15.3.c) (subgenus ***MICRONEPHTHYS***) 9
2 Forked setae present (fig. 15.1.h). A blade-like superior lamella on anterior neuropodia 3
– Forked setae absent. Postsetal notopodial lamella bilobed 4
3 Notopodial cirrus very long in middle feet (fig. 15.1.i) . . . ***N. lyrochaeta*** (p. 341)
– Notopodial cirrus never elongated (fig. 15.1.e) . . . . . ***N. dibranchis*** (p. 341)
4 Branchiae start on setiger 3 or 4. Notopodial cirrus flattened and blade-like (fig. 15.1.k) ***N. macroura*** (p. 343)
– Branchiae start on setiger 9. Notopodial cirrus not flattened (fig. 15.1.n) ***N. malmgreni*** (p. 343)
5 Coarsely toothed geniculate setae present (fig. 15.2.e). Branchiae short, rather flattened ***N. capensis*** (p. 344)
– Coarsely toothed geniculate setae absent 6
6 Branchiae cirriform throughout 7
– Branchiae foliaceous in some feet 8
7 Posterior lamellae large; anterior dorsal lamella bilobed (fig. 15.2.g) . ***N. hombergi*** (p. 344)
– Posterior lamellae small, hardly exceeding the setigerous lobes . . . ***N. hystricis*** (p. 345)
8 Branchiae from setiger 4, and are cirriform anteriorly and foliaceous posteriorly (fig. 15.2.m). Ventral lamella large . . . . . ***N. tulearensis*** (p. 345)

– Branchiae from setiger 8–10, and are foliaceous anteriorly. Posterior ventral lamella small (fig. 15.2.n) . . . . . ***N. paradoxa*** (p. 347)
9 Forked setae present (fig. 15.3.d) . . . . . ***N. sphaerocirrata*** (p. 347)
– Forked setae absent . . . . . ***N. ambrizettana*** (p. 349)

Nephtys (***Aglaophamus***) ***dibranchis*** Grube, 1877
(fig. 15.1.a–h)

Nephthys dibranchis Grube, 1877b: 536; Fauvel, 1932: 117; Fauvel, 1953: 225, fig. 114 e.
Aglaophamus dibranchis: Hartman, 1950; 121.

Body about 25 mm. long. Prostomium (fig. 15.1.d) pentagonal and straight in front with well developed, subequal and tapered antennae. Eyes visible through the skin. Proboscis with 14 rows of four to five papillae each plus a much longer median dorsal one. Jaws (fig. 15.1.b) as tetrahedral chitinous plates. Dorsal cirrus of first foot well developed. Cirriform gills start on setiger 4 and project straight out or are involute, each having a finely tapered notopodial cirrus at the base. Parapodial rami markedly divergent and setigerous lobes pointed. In anterior notopodia (fig. 15.1.c) the presetal lamella is small and auricular and the postsetal lamella similar but larger; in middle feet (fig. 15.1.e) the postsetal lamella projects dorsally and in posterior feet the posterior lamella hardly exceeds the acicular lobe. In anterior neuropidia there are three lamellae; an anterior auricular one, a superior tongue-like lamella and a postsetal auricular one. In middle feet the superior one becomes elongated and strap-like and in posterior feet all three lamellae decrease and the superior one disappears.

The setae are well developed. The anterior fan consists of laddered capillaries (fig. 15.1.f) while the posterior fan consists of numerous long, rather flattened capillaries (fig. 15.1.g) and a row of forked setae (fig. 15.1.h).

Type locality: New Guinea.

Records: Natal (30/30/s, 29/31/s, d) – common in dredgings on sand.

Distribution: Tropical Indian Ocean (s, d, vd); ? New Zealand and Campbell Is. (s).

Nephtys (***Aglaophamus***) ***lyrochaeta*** Fauvel, 1902
(fig. 15.1.i)

Nephthys lyrochaeta Fauvel, 1902: 72, figs. 9–12; Augener, 1918: 160, pl. 2 fig. 12, pl. 3 fig. 59.

Body about 30 mm. long. Prostomium pentagonal and straight in front. Eyes not visible. Proboscis with 14 rows of four to five papillae each plus a larger median dorsal one. Gills from the fourth or fifth setiger, each involute with a notopodial cirrus at its base. According to Fauvel this cirrus is short and according to Augener and Monro it is very long (fig. 15.1.e). In anterior feet all lamellae exceed the setigerous lobes. The notopodium has a round presetal lamella and a larger, orbicular postsetal one. The neuropodium has an oval presetal lamella, a blade-like superior lamella and a large orbicular postsetal lamella. In posterior feet all lamellae

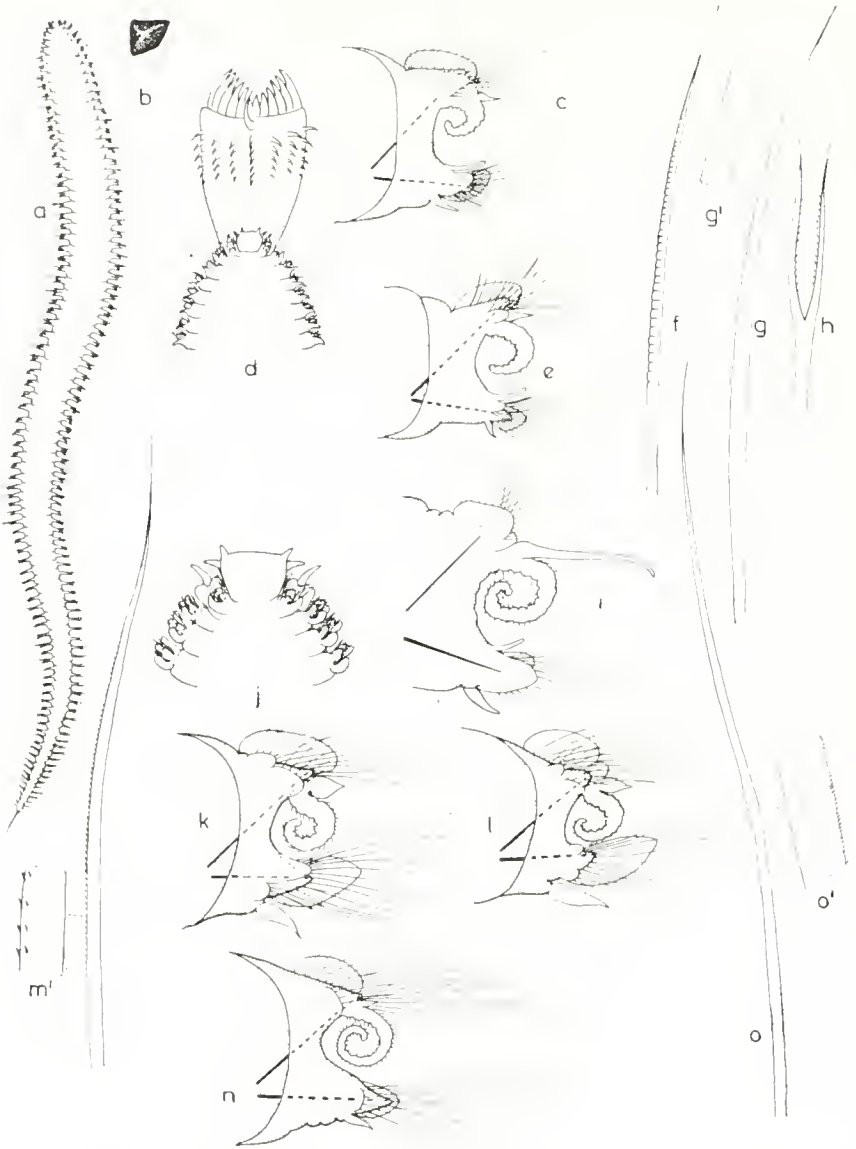

FIG. 15.1. *Nephtys dibranchis*. (A) Entire worm (five times life size). (B) Chitinous jaw. (C) Twelfth foot. (D) Head with proboscis extruded. (E) Middle foot. (F) Laddered pre-acicular seta. (G) Post-acicular seta. (H) Forked seta. *Nephtys lyrochaeta*. (I) Thirty-fifth foot (from Monro, 1936). *Nephtys macroura*. (J) Head. (K) Anterior foot. (L) Middle foot. (M) Post-acicular seta. *Nephtys malmgreni*. (N) Middle foot. (O) Post-acicular seta.

decrease so that they are shorter than the setigerous lobes and the superior lamella of the neuropodium disappears. Setae include the usual anterior fan of laddered capillaries and a posterior fan of long-bladed setae and in both rami there are also numerous forked setae though these are difficult to find.

TYPE LOCALITY: Senegal, western Africa.

RECORDS: Not recorded from southern Africa.

DISTRIBUTION: Morocco; Brazzaville-Congo (s); Persian Gulf (s).

Nephtys (*Aglaophamus*) *macroura* Schmarda, 1861
(fig. 15.1.j–m)

Nephthys macroura Schmarda, 1861: 91, figs. A, K, a, b; Day, 1960: 327.
Aglaophamus macroura: Hartman, 1950: 118.

Body large, reaching 150 mm. Prostomium (fig. 15.1.j) subquadrate without visible eyes. Second antenna longer than the first and ventro-lateral in origin. Proboscis with 22 rows of large papillae distally and 14 rows of smaller papillae proximally. Ventral cirrus of first foot elongate and flattened, but the dorsal cirrus is absent. Branchiae from setiger 2–4, at first small but increase to maximum size at the 20th foot (fig. 15.1.k) and then decrease. Each is cirriform and involute and bears a flattened, blade-like dorsal cirrus. Ventral cirri blade-like throughout. Setigerous lobes prolonged into small auricular processes into which the acicula extend. Presental lamellae of both rami bilobed. In the notopodium the superior presetal lamella is very small, and the inferior one large and square. The latter becomes obscure after the first 20 feet but in the neuropodium the two widely separated parts persist as small lobes above and below the setigerous lobe (fig. 15.1.l). Postsetal lamellae of both rami are large and unequally bilobed. In the notopodium the larger superior part is expanded as a foliaceous process. In the neuropodium the main lobe is inferior and it becomes ligulate in posterior feet. Setae include the usual laddered capillaries and a posterior fan of very long, rather flattened capillaries (fig. 15.1.m).

TYPE LOCALITY: Auckland, New Zealand.

RECORDS: Cape (32/17/d, 33/17/d, 34/25/s).

DISTRIBUTION: Subantarctic (s, d); Chile (s, d); Antarctica (d, vd).

Nephtys (*Aglaophamus*) *malmgreni* Theel, 1879
(fig. 15.1.n–o)

Nephthys malmgreni Theel, 1879: 26, pl. 1 fig. 17, pl. 2 fig. 17; Fauvel, 1923: 371, fig. 145 k.
Aglaophamus malmgreni: Pettibone, 1963: 191, fig. 48b.

Body up to 120 mm. long for 80 segments. Prostomium pentagonal, without eyes and with the inferior antennae stouter than the superior pair. Proboscis without an unpaired median papilla but with 14 rows of papillae. Each row has 12–18 papillae which are large distally but grade down to very small ones proximally. First setiger

with a rather long ventral cirrus but a short dorsal one. Branchiae from setiger 10–15, cylindrical and involute. They are well developed in later feet (fig. 15.1.n). Notopodium conical. Presetal notopodial lamella rudimentary. Postsetal notopodial lamella divided forming a large rounded superior part which projects above the level of the parapodium and a small inferior part at the apex of the setigerous lobe. Neuropodium conical. Presetal neuropodial lamella absent. Postsetal lamella rounded to auricular, slightly exceeding the setigerous lobe on anterior feet. Notopodial cirrus short and tapered but not flattened. Ventral cirrus small and conical. Anterior capillaries are laddered. Posterior row of setae (fig. 15.1.o) long, fine and minutely denticulate on one margin. No specialised setae.

Type locality: Deep dredging off Norvaya Zembya.

Records: Not recorded from Southern Africa.

Distribution: Norway.

Nephtys (*Nephtys*) *capensis* Day, 1953
(fig. 15.2.a–f)

Nephthys capensis Day, 1953: 431, fig. 5 g–m.

Body about 60 mm. long. Prostomium (fig. 15.2.f) pentagonal and slightly arched in front. Eyes not visible. Posterior pair of antennae only slightly shorter than anterior pair. Proboscis with 22 rows each with six papillae plus a larger median dorsal papilla. Ventral cirrus of first foot equal to antennae, dorsal cirrus lacking. Branchiae from the fourth foot, at first rectangular and compressed (fig. 15.2.d) but later ones become cirriform and recurved (fig. 15.2.e) particularly in large specimens. Notopodium conical with a small presetal lamella (which is not notched) and a large rounded postsetal one. Neuropodium conical with the upper margin of the small presetal lamella slightly produced and a large postsetal lamella with a rounded end projecting well beyond the setigerous lobe. Setae include an anterior fan of laddered capillaries (fig. 15.2.a) and a larger posterior fan containing numerous very long setae with spinulose margins (fig. 15.2.b, b^1) and a few shorter geniculate setae with coarse teeth (fig. 15.2.c).

Type locality: Table Bay, South Africa.

Records: Cape (29/16/i, 32/18/s and 33/18/e, i, s to 33/27/e); Natal (29/31/s, 27/32/e).

Distribution: Endemic.

Nephtys (*Nephtys*) *hombergi* Savigny, 1820
(fig. 15.2.g–i)

Nephthys Hombergi Savigny, 1820: 34.
Nephthys hombergi: Fauvel, 1923: 367, fig. 143 a–d.

Length up to 200 mm. for 200 segments. Prostomium pentagonal with two small eyes and four subequal antennae. First setiger with a ventral cirrus similar to the antennae and a button-like dorsal cirrus. Proboscis with 22 rows each with two to

four papillae and a much larger median dorsal papilla. Jaws (fig. 15.2.i) as a pair of quadrangular chitinous plaques. The two rami of the parpodia (fig. 15.2.g) are well separated and the setigerous lobes are rounded with a small projection over the aciculum. In the notopodium the presetal lamella is deeply bilobed and the postsetal lobe is orbicular and exceeds the setigerous lobe. In the neuropodium the presetal lamella is bilobed with a longer superior part while the large postsetal lamella which is united to the presetal lamella superiorly; it is roughly oblong and greatly exceeds the setigerous lobe. Branchiae start on setiger 4 and are cirriform and recurved. Each bears a small notopodial cirrus. There are no specialised setae, simply an anterior fan of laddered capillaries and a posterior fan of longer hispid-edged setae (fig. 15.2.h).

Type locality: Coast of France.

Records: South West Africa (22/14/i, 26/14/d, 26/15/i, s); Cape (33/18/i, s to 34/23/e, s, d) to Natal (31/29/s).

Distribution: Eastern Atlantic from Norway (s, d), Sweden (d) and the English Channel (e, i, s) to Morocco (s, d); Angola (s), Mediterranean (s).

Nephtys (*Nephtys*) *hystricis* McIntosh, 1900

Nephthys hystricis McIntosh, 1900: 259; Fauvel, 1923: 373, fig. 146 a–e.

Body about 40 mm. long. Prostomium arched in front and pointed behind with four small, subequal antennae. Ventral cirrus of setiger 1 small and conical, dorsal cirrus even smaller. Proboscis with 22 rows each with 35 small papillae and a long median dorsal papilla. Parapodial rami markedly divergent so that the segments appear X-shaped. Setigerous lobes conical and lamellae poorly developed. Presetal and postsetal lamellae of both the notopodium and neuropodium are rounded and slightly exceed the setigerous lobes. Branchiae start on setiger 9, soon increase to large cirriform recurved organs bearing small notopodial cirri and then disappear about the 35th to 40th foot. Setae include an anterior fan of laddered capillaries and a posterior fan of long, striate-edged capillaries.

Type locality: Mediterranean.

Records: Southern African records doubtful (37/17/vd and 26/32/?).

Distribution: Eastern Atlantic from the North Sea to Morocco (s, d); Mediterranean (s).

Nephtys (*Nephtys*) *tulearensis* Fauvel, 1919
(fig. 15.2.j–m)

Nephthys tulearensis Fauvel, 1919: 422, pl. 16 figs. 37–39.

Length about 80 mm. by 2·5 mm. Prostomium slightly curved in front with four equal antennae. Proboscis with 22 rows of three to five papillae per row. Ventral cirrus of setiger 1 well developed; dorsal cirrus poorly developed. Setigerous lobes of parapodia bluntly conical. In anterior feet (fig. 15.2.l) the notopodium has a

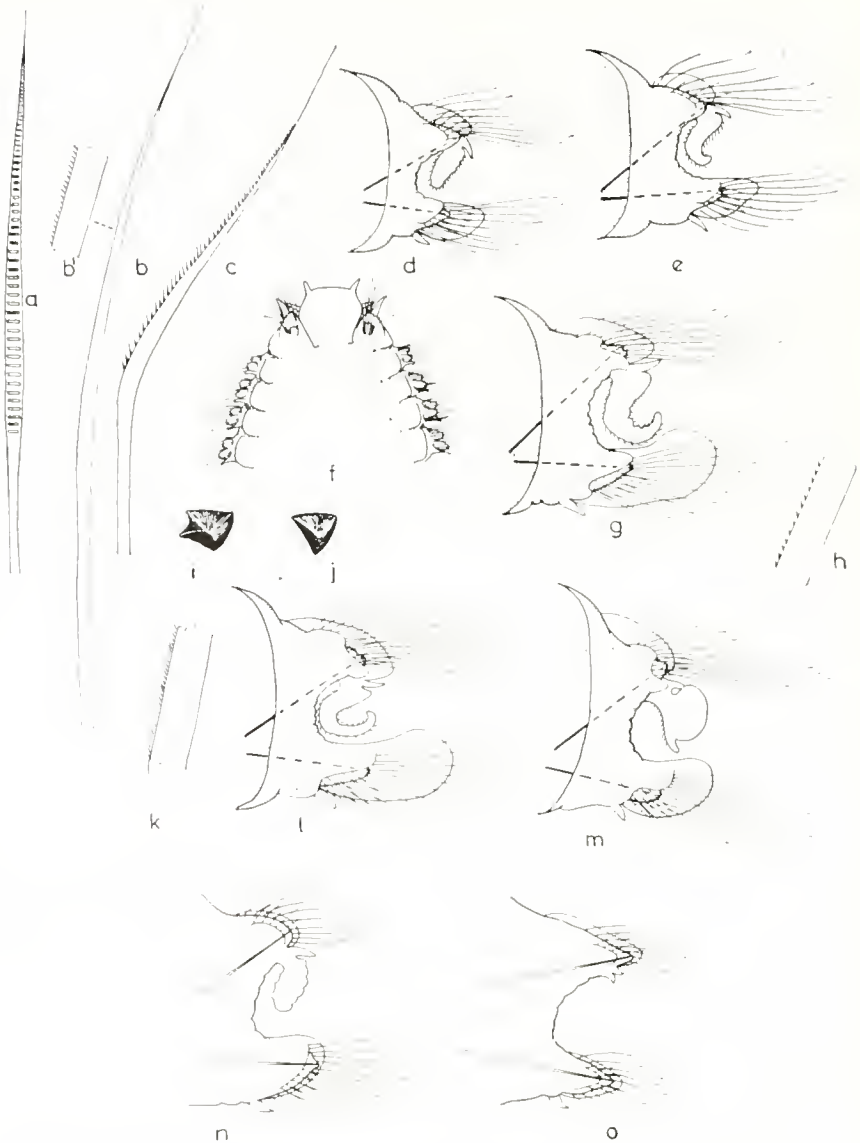

FIG. 15.2. *Nephtys capensis*. (A) Laddered capillary. (B) Long post-acicular capillary and (B¹) details of marginal spinules. (C) Geniculate seta. (D) Anterior foot. (E) Posterior foot. (F) Head. *Nephtys hombergi*. (G) Foot. (H) Part of blade of post-acicular capillary. (I) Jaw. *Nephtys tulearensis*. (J) Jaw. (K) Part of blade of post-acicular capillary. (L) Anterior foot. (M) Posterior foot. *Nephtys paradoxa* (after Fauvel). (N) Middle foot. (O) Posterior foot.

small bilobed presetal lamella and a well developed oval postsetal lamella. Neuropodium with a small presetal lamella whose superior margin is united to the long postsetal lamella whose distal edge is rounded. Branchiae start on setiger 4 and are at first large, cirriform and recurved with a small notopodial cirrus at the origin. In posterior feet (fig. 15.2.m) the parapodial lamellae are all smaller but essentially similar in shape while the branchiae develop a rounded lamellar expansion on the external margin. The setae include the normal anterior fan of laddered capillaries and the posterior fan of long capillaries with a finely spinulose margin (fig. 15.2.k).

Type locality: Tulear, Madagascar.

Records: Southern Cape (34/22/s and 33/25/e) to Natal (29/31/i) and Mocambique (26/32/i and 23/35/e, s) – common.

Distribution: Madagascar (i) and Persian Gulf (s).

Nephtys (*Nephtys*) *paradoxa* Malmgren, 1874
(fig. 15.2.n–o)

Nephthys paradoxa Malmgren, 1874: 77, pl. 1 fig. 2; Fauvel, 1923: 375, fig. 146 f–i; Pettibone, 1963: 200, fig. 47 d.
Nephtys? paradoxa: Day, 1960: 327.

A large species reaching 150 mm. Prostomium straight or slightly concave anteriorly. ? two eyes. Posterior pair of antennae larger than the anterior pair. Ventral cirrus of first foot stout and conical but the dorsal cirrus is merely a low papilla. Proboscis with 22 rows each with four to six papillae and an enlarged median dorsal one. Parapodia with divergent rami. Notopodium with a broadly rounded setigerous lobe while that of the neuropodium is conical but both become more pointed posteriorly. Anterior lamellae rudimentary in both rami. Posterior lamellae of both rami small, rounded, hardly exceeding the setigerous lobes. Branchiae start on setiger 8–10 and are at first cirriform and recurved with a small notopodial cirrus at the base. In later feet the branchiae become flattened or lamellar (fig. 15.2.n) and then decrease in size to disappear on posterior feet (fig. 15.2.o). Setae include the usual anterior fan of laddered capillaries and a posterior fan of long, rather flattened capillaries with transverse rows of fine teeth on one margin.

Type locality: Goteborg, Sweden.

Records: Southern Africa records doubtful (32/17/d and 34/18/vd).

Distribution: North Atlantic (Greenland (s, d, vd), Norway (s, d), Sweden (d, vd)); Maine and Massachusetts (s, d); Arctic; Behring Sea; N. W. Japan.

Nephtys (*Micronephthys*) *sphaerocirrata* Wesenberg-Lund, 1949
(fig. 15.3.a–d)

Nephthys sphaerocirrata Wesenberg-Lund, 1949: 294, figs. 24–26.

A small species up to 25 mm. long. Prostomium (fig. 15.3.b) pentagonal with a straight anterior margin and rather long, slender and knobbed antennae. Eyes far back, opposite setiger 2. Proboscis with 22 rows each with six to nine tapered

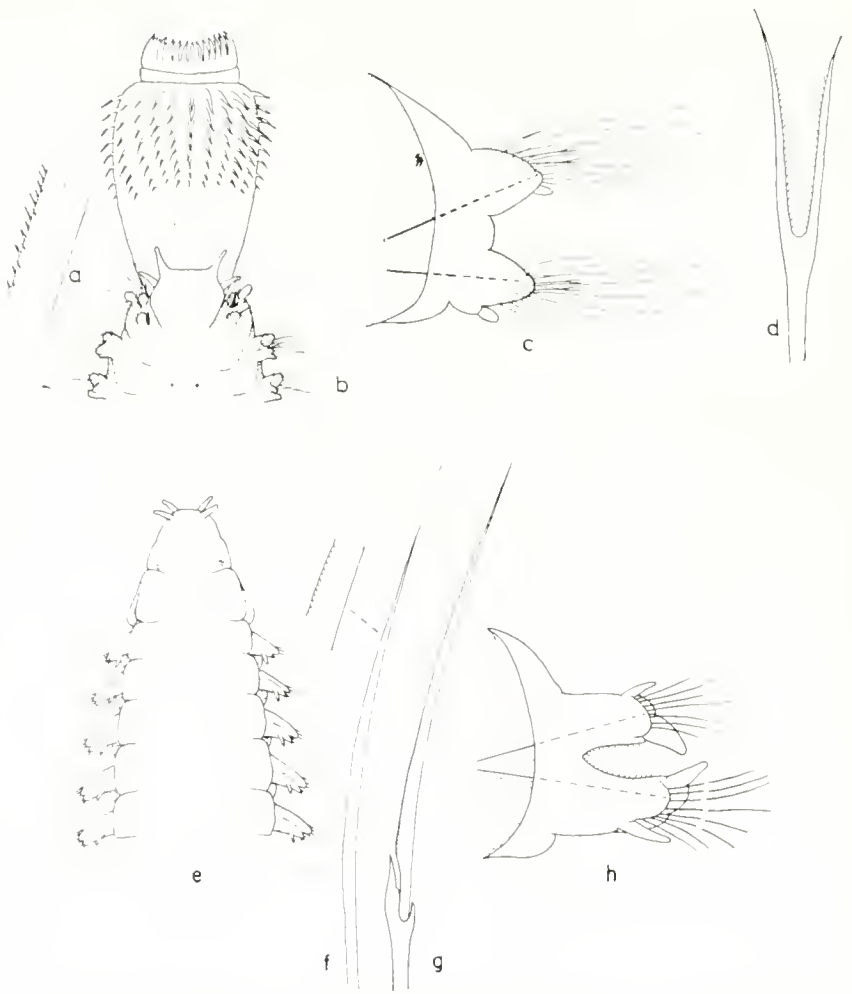

FIG. 15.3. *Nephtys sphaerocirrata*. (A) Part of long post-acicular capillary. (B) Head and proboscis. (C) Foot. (D) Forked seta. *Paralacydonia paradoxa*. (E) Head. (F) Simple capillary. (G) Compound spinigerous seta. (H) Foot (anterior view).

papillae. No enlarged median dorsal papilla. Parapodia with vestigial lamellae, the first having a knobbed ventral cirrus. Subsequent feet (fig. 15.3.c) have small papilliform notopodial cirri but lack branchiae entirely. The setigerous lobe of the notopodium is bluntly conical without visible lamellae. The setigerous lobe of the neuropodium is conical with a small postsetal lamella. Setae include an anterior fan

of laddered capillaries and a posterior fan of very long capillaries with a spinulose margin (fig. 15.3.a) and two to three short forked setae with spinules on their inner margins (fig. 15.3.d).

Type locality: Persian Gulf.

Records: South West Africa (26/15/s); Cape (from 32/17/d to 33/27/s) – abundant in muddy sand.

Distribution: Persian Gulf (s).

Nephtys (*Micronephthys*) *ambrizettana* Augener, 1918

Nephthys ambrizettana Augener, 1918: 166, pl. 2 fig. 13, pl. 3 figs. 60, 61.

A small species 6·5 mm. long with 42 segments. The prostomium is as broad as long with slender antennae. Doubtful eye-spots behind the prostomium. Ventral cirrus of setiger 1 longer than the setigerous lobe; dorsal cirrus similar. Normal body segments with poorly developed parapodia. Notopodial cirri and branchiae are entirely absent and the ventral cirri are small. Presetal lamellae are either rudimentary or absent. The setigerous lobes are conical and the postsetal lamellae though definitely present hardly exceed the setigerous lobes. Setae include an anterior fan of laddered capillaries and a posterior fan of long setae which are finely serrate on the convex margin.

Type locality: Ambrizette, Angola.

Records: Not recorded from South Africa.

Distribution: Angola.

Family **LACYDONIIDAE** Bergström, 1914

Body vermiform with numerous segments. Prostomium rounded or truncate with four small frontal antennae. Proboscis unarmed, sometimes papillose. Buccal segment apodous and achaetous but with one pair of tentacular cirri or none. The next one to three segments uniramous; subsequent segments biramous with lamellate setigerous lobes and small conical dorsal and ventral cirri. Notosetae as simple capillaries; neurosetae mainly compound and spinigerous.

Bergström regarded the Lacydoniinae as a subfamily of the Phyllodocidae. Hartman (1959) raised it to family rank and Pettibone (1963) felt that *Paralacydonia* should be placed in a separate family *Paralacydoniidae* related to the Nephtyidae.

Only two genera known – *Lacydonia* Marion and Bobretzky and *Paralacydonia* Fauvel.

Key to Genera

1 Peristome with one pair of tentacular cirri and the next three segments with uniramous parapodia . . . . . ***LACYDONIA****

– Peristome without tentacular cirri and only the next segment with uniramous parapodia ***PARALACYDONIA***

PARALACYDONIA Fauvel, 1913

Body elongate, rectangular in section and superficially like a small *Nephtys*. Prostomium truncate with four small frontal antennae. Peristome apodous and achaetous and the next segment with uniramous parapodia. Subsequent segments with flattened, biramous parapodia. Notopodia and neuropodia well separated and supported by acicula. Notopodium with a dorsal cirrus and a fan of simple capillaries; neuropodium with a ventral cirrus, a fan of compound spinigerous setae and usually a few simple capillaries. No branchiae.

Type species: *Paralacydonia paradoxa* Fauvel 1913.

Paralacydonia paradoxa Fauvel, 1913
(fig. 15.3.e–h)

Paralacydonia paradoxa Fauvel, 1913: 54, fig. 35; Fauvel, 1923: 198, fig. 74 e–i; Pettibone, 1963: 184, fig. 46.

Body 20–30 mm. long, rectangular in section and resembling a small *Nephtys*. Prostomium (fig. 15.3.e) a truncate cone with four small, biarticulate frontal antennae. A pair of obscure subdermal eyes (not noted in earlier descriptions). Peristome reduced and without parapodia or tentacular cirri. Mouth ventral, with a smooth lining leading to an unarmed but muscular pharynx. First setiger uniramous with a papilliform dorsal cirrus, a stout setigerous lobe bearing a fan of compound spinigerous setae and a ventral cirrus. Subsequent segments all with biramous parapodia. Notopodium (fig. 15.3.h) with a small conical dorsal cirrus and a well

developed setigerous lobe with a low, rounded presetal lip and a larger, notched postsetal lamella and between the two a fan of notosetae. Notopodia and neuropodia well separated without any sign of an interramal gill but with the inner surfaces ciliated. Neuropodium larger than the notopodium with a low rounded presetal lip, a fan of neurosetae and a large notched postsetal lamella and a digitiform ventral cirrus. Notosetae (fig. 15.3.f) are all simple capillaries with smooth, somewhat flattened blades. Neurosetae are mainly compound with one to two simple capillaries inferiorly. The compound setae (fig. 15.3.g) are heterogomph spinigers with one side of the shaft-head produced as a spine and the blade serrated on one margin.

Type locality: Monaco (Mediterranean).

Records: Natal (30/30/s); Mocambique (24/34/s).

Distribution: Mediterranean (s); Morocco (s); Atlantic and Pacific coasts of U.S.A. (d, vd.); Yellow Sea.

Family **GLYCERIDAE** Grube, 1850
(including GONIADIDAE Kinberg, 1866)

Body elongate with numerous segments and tapered at both ends. Prostomium long and tapered, tipped with four small biannulate antennae and superficially ringed. One to two pairs of eyes. No palps. Proboscis very long with four jaws or two jaws and a circle of paragnaths. The surface is papillose and V-shaped chevrons may be present near the base. Parapodia from the peristomial segment onwards. Parapodia typically biramous with simple notosetae and compound neurosetae but the notopodium may be absent and the feet uniramous on some or all of the segments. When fully developed the foot has a dorsal cirrus, two presetal and two postsetal lobes and a ventral cirrus. Branchiae may be present or absent.

Records from southern Africa

Glycera alba (Muller)	16Wi, 32PiCd, 45Pi, 50Cs
Glycera benguellana Augener	50Cs
as *Glycera capitata* var. *benguellana* Augener	34Cd
Glycera convoluta Keferstein	31As, 40Ni, 41Ci, 50Cs
as *Glycera africana* Arwidsson	26As, 27Mi
as *Glycera convoluta africana* Arwidsson	12Ci
as *Glycera tridactyla* Schmarda	26Ws
Glycera lancadivae Schmarda	53Mi
Glycera lonigipinnis Grube	50Cs
Glycera natalensis Day	45Ni
Glycera papillosa Grube	50Cs
Glycera prashadi Fauvel	40 Ni, 41Ci, 45Pi, 50Cs
as *Glycera convoluta* var. *capensis* Monro	35Ci, 36Ci
as *Glycera cirrata* (non Grube)	41Ci
Glycera rouxi Audouin & Milne-Edwards	50Csd, —Ns
as *Glycera goesi* Malmgren	32Cd
Glycera subaenea Grube	27Mi, 40PiNi
Glycera tesselata Grube	10Cd, 27Mi
Glycera unicornis Savigny	41Ci, 45Pi, 50Csd
as *Glycera kraussi* Stimpson	2Ci, 15Csd, 21Ci
Glycinde capensis Day	50Cs, —Nsd
Glycinde kameruniana Augener	50Cs
Goniadella gracilis (Verrill)	56Csd
Goniadopsis incerta Fauvel	41Ci
Goniadopsis maskallensis (Gravier)	45Ni
Goniada congoensis Grube	33As
Goniada emerita Audouin & Milne-Edwards	40Pi
Goniada maculata Oersted	40Pi
Ophioglycera eximia (Ehlers)	50Csd

BIOLOGICAL NOTES

The glycerids burrow in sandy substrata by means of an eversible proboscis. They are very active worms and when dug out they lash about vigorously and shoot out a proboscis almost half as long as the body. At the end of the proboscis there are well developed jaws and probably most species are predators or at least carnivorous for very little sand is ever found in the gut.

THE MAIN DIAGNOSTIC CHARACTERS

Recent reviews of the family will be found in Fauvel (1923) and Hartman (1950). Fauvel recognises a single family *Glyceridae* whereas Hartman has resurrected the superfamily *Glycerea* Grube (1850) and the two families erected by Malmgren (1867) namely *Glyceridae* and *Goniadidae*. Since their structure is essentially similar and there are less than ten recognisable genera, Fauvel's view of a single family *Glyceridae* is accepted here. However, in the key given below the two subfamilies *Glycerinae* and *Godiadinae* are distinguished.

The head (fig. 16.1.a). This is a long, conical, annulated structure with four small, biarticulated antennae at its tip and eyes may be present in both the basal and terminal rings. The number of rings may vary with the degree of contraction and the eyes may be hidden below the surface so both of these characters are of limited value.

The proboscis (fig. 16.1.m). This is a very long structure and in the living animal it may be extended to a surprising distance either to grasp prey or to burrow through the sand. The structures on the proboscis provide valuable taxonomic characters and if it is not everted it must be dissected by a slit along the body. The structures which may be found on the probosces of different genera include : (a) proboscidial papillae, (b) chevrons, (c) terminal papillae, (d) jaws with their supports, denticles or paragnaths.

(a) The *proboscidial papillae* or *proboscidial organs* (fig. 16.1.d, g, j, n) are soft or lightly chitinised papillae which cover the surface of the proboscis and may be arranged in distinct longitudinal rows. Their structure is basically tubular, the central canal ending in a terminal pore. The whole papilla may be broad and squat or long and conical and its sides are either smooth, longitudinally ridged, transversely ringed (fig. 16.1.n) or there may be a striated flange at the distal end which is often slanting and gives the impression of a projecting finger-nail. In most genera the proboscidial papillae are essentially similar and uniformly distributed over the surface but in *Glycinde* (fig. 16.5.l) there are five longitudinal belts of papillae each differing in structure.

(b) The *chevrons* (fig. 16.4.b) are a series of dark, V-shaped chitinous elements which occur on either side of the base of the proboscis. Their presence is of generic importance but their number and detailed structure is of doubtful value.

(c) The *terminal papillae* are 15–20 large soft rounded papillae which encircle the distal end of the everted proboscis. They are of little taxonomic value.

(d) The *jaw elements* occur at the distal end of the proboscis and are black and heavily chitinised. In the *Glycerinae* there are four simple hooked *jaws* each with a *jaw-support* or *aileron* (fig. 16.1.h). The jaws seem to be very constant in shape but the jaw supports vary from species to species and provide useful characters. The basic structure is V-shaped with unequal prongs, but the two prongs may be united in varying degrees or one prong may be reduced to a mere vestige fused to the base of the other (fig. 16.1.o). In the *Goniadinae* the jaw elements (fig. 16.4.c) consists of a pair of larger *toothed jaws* or *macrognaths* and two arcs of *denticles* or *micrognaths* which together form a complete circle around the open end of the proboscis. There may be four or more teeth on the macrognaths but it is suspected that the number of teeth increases with the size of the worm. The denticles are roughly X-shaped or Y-shaped but the exact shape is of doubtful importance. The number of denticles however is a useful character if some allowance is made for the size of the specimen.

The parapodia and regions of the body. The feet are typically biramous. The notopodium consists of a dorsal cirrus and presetal and postsetal lobes with simple setae between them. Similarly the neuropodium consists of presetal and postsetal lobes with compound setae between them and a ventral cirrus below. The two postsetal lobes are often united to form a single lobe (fig. 16.1.p). The notopodia may be reduced to a dorsal cirrus and the parapodium then becomes uniramous with compound setae only. This occurs in all feet of *Hemipodus*, in the first two feet of *Glycera* and in numerous anterior segments of other genera. In *Goniada* and *Goniadella* there is an abrupt change from the anterior uniramous segments to the posterior biramous segments so that two body regions are recognised. In *Goniadopsis*, *Glycinde* and *Ophioglycera* the change is more gradual and a third intermediate or middle region is recognised. The structure of the parapodial lobes and the number of segments in the anterior and middle regions provide useful characters.

The setae. The setae are usually slender-bladed capillaries in the notopodia (fig. 16.1.e) and compound spinigerous forms in the neuropodia (fig. 16.1.f) and the detailed structure is seldom important. In some species, however, there are stout spines in the posterior notopodia which may have a tapered hood or *arista*; in others there may be falcigerous compound setae in the neuropodia.

The branchiae. In the genus *Glycera* the nature of the gills is of considerable importance. They may be entirely absent (fig. 16.1.p) or rectractile and inserted anywhere on the parapodium or non-retractile and inserted on the dorsal edge of the parapodium (fig. 16.1.b). They may also be simple or branched but they should be carefully investigated over a number of parapodia for the length will vary with the degree of distension of the parapodium and retractile branchiae may show every degree of eversion from complete retraction through partial eversion as a blunt sac to complete eversion and the appearance of two or more digitiform lobes.

Key to Genera

1 Four horny jaws with supports (fig. 16.1.m). Parapodia all alike and the body not divided into regions (subfamily Glycerinae) 2

– A pair of large toothed jaws and a circle of denticles (fig. 16.4.b) (subfamily Goniadinae) 3

2 Parapodia uniramous with compound setae only . . . . . ***HEMIPODUS****
– Parapodia biramous with simple capillaries and compound spinigers (fig. 16.1.b, e, f) ***GLYCERA*** (p. 355)
3 Segments all similar with uniramous parapodia and compound setae . . ***PROGONIADA****
– Segments not all similar; anterior ones uniramous and posterior ones biramous . . 4
4 V-shaped chevrons present at the base of the proboscis (fig. 16.4.b). Body divided into two regions 5
– V-shaped chevrons absent from the base of the proboscis. Body divided into three regions 6
5 Neurosetae are all spinigers . . . . . ***GONIADA*** (p. 363)
– Neurosetae include both spinigers and falcigers . . . . ***GONIADELLA*** (p. 367)
6 Proboscis uniformly covered with similar papillae 7
– Proboscis with distinct rows of dissimilar papillae (fig. 16.5.l). Neurosetae are all spinigers . . . . . ***GLYCINDE*** (p. 371)
7 Neurosetae are all spinigers throughout . . . . . ***OPHIOGLYCERA*** (p. 372)
– Neurosetae include both falcigers in the anterior region and spinigers in the middle and posterior regions . . . . . ***GONIADOPSIS*** (p. 368)

GLYCERA Savigny, 1818

Body elongate, rounded in section and tapered at both ends. Prostomium a long annulated cone bearing four small antennae at its tip. Proboscis very long with the surface densely papillose and four jaws at its end, each with a V-shaped support. Proboscidial papillae all essentially similar and not arranged in rows. Peristome and the next segment with uniramous parapodia but all subsequent segments with biramous parapodia. Notosetae are all simple capillaries; neurosetae compound and spinigerous.

Type species: *Glycera unicornis* Savigny, 1818.

Key to Species

1 A single postsetal lobe 2
– Two postsetal lobes 7
2 Branchiae absent 3
– A single dorsal branchial filament (fig. 16.1.b) . . . ***G. longipinnis*** (p. 356)
3 Proboscidial papillae with a projecting flange like a finger-nail. Postsetal lobe asymmetrically pointed (fig. 16.1.g, i) . . . . . ***G. natalensis*** (p. 356)
– Proboscidial papillae conical. Postsetal lobe low and rounded 4
4 Superior presetal lobe minute. (Proboscidial papillae very long, not ringed. Jaw supports deeply forked) (fig. 16.1.j–l) . . . . . ***G. papillosa*** (p. 358)
– Presetal lobes subequal 5
5 Proboscidial papillae smooth. (Jaws supports without a notch between the two prongs) ***G. capitata****
– Proboscidial papillae ringed (fig. 16.1.n) 6
6 Jaws supports with the two prongs almost separated. Postsetal lobe emarginate ***G. lancadivae*** (see 8) (p. 359)
– Jaw supports with only one prong developed (fig. 18.1.o). Postsetal lobe low and rounded . . . . . ***G. benguellana*** (p. 358)
7 Branchiae entirely absent. (Postsetal lobes low and rounded. Jaw supports deeply divided) 8
– Branchiae present but may be retractile. 9

8 Proboscidial papillae conical with 15–20 rings . . . ***G. lancadivae*** (see 6) (p. 359)
– Proboscidial papillae very long, not ringed . . . . . ***G. tesselata*** (p. 359)
9 Non-retractile branchiae arising from the dorsal edges of the parapodia 10
– Retractile branchiae arising from the anterior faces of the parapodia 12
10 Branchiae branched and arise from the bases of the parapodia (fig. 16.2.f). Postsetal lobes equal and pointed . . . . . ***G. prashadi*** (p. 359)
— Branchiae simple and arise from the same level as the parapodial lobes (fig. 16.2.i). Superior postsetal lobe pointed, the inferior one rounded 11
11 Branchial filament longer than the parapodial lobes (fig. 16.2.i) . ***G. convoluta*** (p. 360)
— Branchial filament shorter than the parapodial lobes (fig. 16.2.k) . . ***G. alba*** (p. 360)
12 Branchiae simple 13
— Branchiae compound 14
13 Branchiae globular. Posetal lobes equal and rounded (fig. 16.2.m) . ***G. gigantea**** (p. 362)
— Branchiae cylindrical. Postsetal lobes unequal and pointed (fig. 16.3.d) . ***G. rouxi*** (p. 362)
14 Branchiae with two to three filaments. Postsetal lobes subequal and pointed (fig. 16.3.m) ***G. unicornis*** (p. 362)
— Branchiae with three to five filaments. Postsetal lobes unequal, the superior one pointed, the inferior one low and rounded (fig. 16.3.n) . . . . ***G. subaenea*** (p. 363)

Glycera longipinnis Grube, 1878
(fig. 16.1.a–f)

Glycera longipinnis Grube, 1878: 182, pl. 8 fig. 9; Fauvel, 1932: 125, pl. 4 figs. 11–14; Fauvel, 1953: 291, fig. 148 a–d; Day, 1960: 329.

Body pale, about 100 mm. long and tapered towards both extremities. Prostomium (fig. 16.1.a) a slender cone with about 12 rings. Proboscis covered with long cylindrical papillae without rings and a few stout forms (fig. 16.1.d). Jaw supports (fig. 16.2.c) with two long slender rami, one twice the length of the other and narrowly united at the base. Branchiae present from the 20th foot. Each gill is a single filament rather longer than the presetal lobes and arises from the dorsal edge of the foot near the origin of the parapodial lobes. Presetal lobes elongate and pointed, subequal. Postsetal lobes fused to form a single low, rounded or faintly bilobed structure (fig. 16.1.b). Dorsal cirrus ovoid. Ventral cirrus triangular, much shorter than the presetal lobes. Notosetae (fig. 16.1.e) and neurosetae (fig. 16.1.f) with rows of minute spinules along the blades.

Type locality: Philippine Islands.

Records: Cape (34/18/s).

Distribution: Tropical Indo-west-Pacific (s, d).

Glycera natalensis Day, 1957
(fig. 16.1.g–i)

Glycera natalensis Day, 1957: 86, fig. 5 k–o.

Body pale and slender, up to 63 mm. long. Prostomium indistinctly annulated. Proboscis with long delicate papillae (fig. 16.1.g) terminating in a fingernail-like expansions as in *G. convoluta* plus a few ovoid forms. Jaw supports (fig. 16.1.h) forked, the shorter ramus being half the length of the longer and completely united

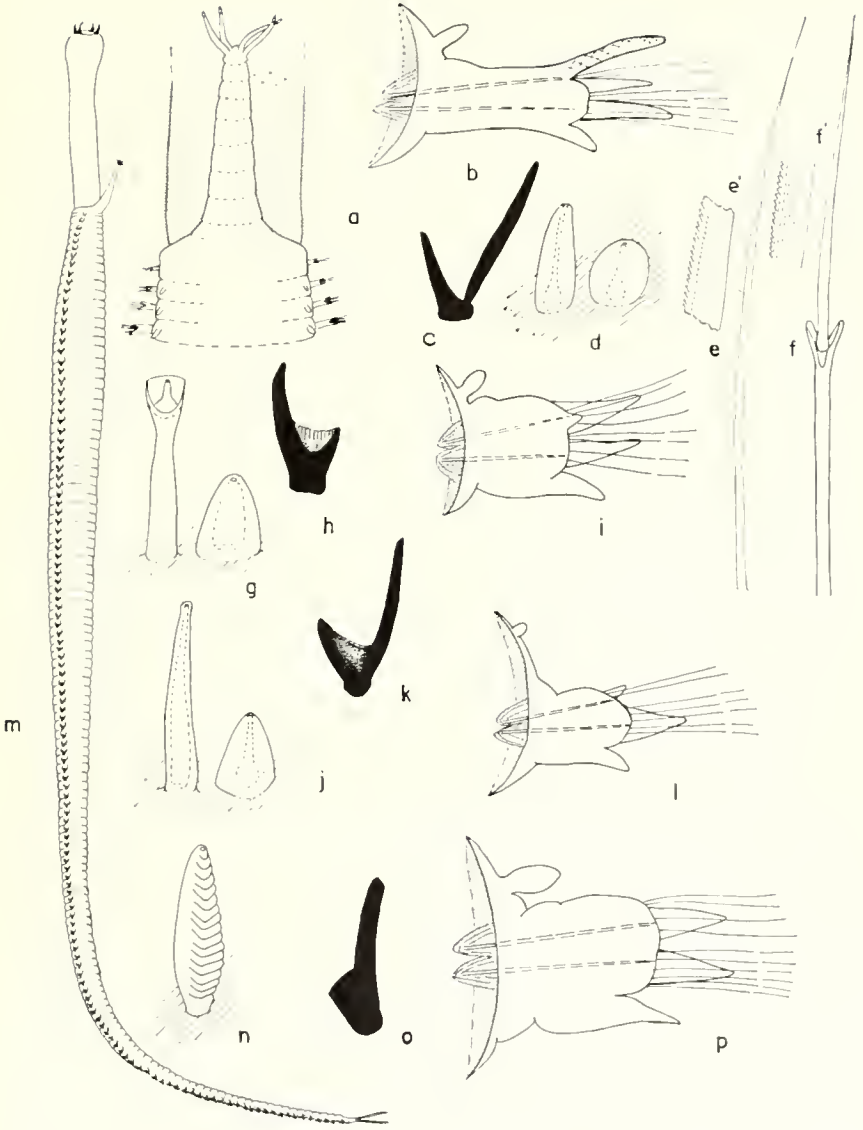

FIG. 16.1. *Glycera longipinnis*. (A) Head and base of proboscis. (B) Posterior view of middle foot. (C) Jaw support. (D) Proboscideal papillae. (E) Notoseta. (F) Neuroseta. *Glycera natalensis*. (G) Proboscideal papillae. (H) Jaw support. (I) Posterior view of middle foot. *Glycera papillosa*. (J) Proboscideal papillae. (K) Jaw support. (L) Posterior view of middle foot. *Glycera benguellana*. (M) Entire worm (twice natural size). (N) Proboscideal papilla. (O) Jaw support. (P) Posterior view of middle foot.

to it by a paler chitinous area. No gills. Two equal, pointed presetal lobes and a postsetal lobe which might be termed one and a half there being a superior pointed portion united without a notch to an inferior rounded part (fig. 16.1.i).

Type locality: Durban, South Africa.

Records: Natal (29/31/i) – no other records.

Glycera papillosa Grube, 1857
(fig. 16.1.j–l)

Glycera papillosa Grube, 1857: 176; Augener, 1922: 203, text-fig. 9 a–c; Day, 1960: 328.

A small species 20–30 mm. long. Prostomium with about eight rings. The papillae on the proboscis (fig. 16.1.j) include a few ovoid forms and numerous very long, slender forms which are not ringed. The jaw supports (fig. 16.1.k) are deeply forked and slender, the shorter limb being half the length of the longer one and united to it by a paler area. There are no gills. The superior presetal lobe (fig. 16.1.l) is minute, the inferior one large and pointed. There is a single broadly rounded postsetal lobe, the same length as the ventral cirrus. The dorsal cirrus is small and arises well above the foot.

Type locality: Valparaiso, Chile.

Records: Cape (34/18/s to 34/23/s, d and 33/28/s); Natal (30/30/s).

Distribution: Chile (i, s, d); North Carolina (s).

Glycera benguellana Augener, 1931
(fig. 16.1.m–p)

Glycera capitata Oerst. var. *benguellana* Augener, 1931: 303, fig. 9.
Glycera benguellana: Day, 1960: 329, fig. 8 b–e.

Body (fig. 16.1.m) about 100 mm. long. Prostomium long, with numerous (? 30) indistinct rings. Proboscis with a few broadly conical papillae and numerous digitiform ones with 10–16 rings (fig. 16.1.n). Jaw supports (fig. 16.1.o) blade-like, the shorter limb being a mere expansion at the base of the other. Branchiae absent. Feet with two triangular presetal lobes of which the superior is very slightly shorter in the middle of the body but definitely so posteriorly. The postsetal lobe is low and rounded (fig. 16.1.p). The dorsal cirrus is relatively large and arises just at the junction of the parapodium with the body.

Type locality: Dredged in 230 m. off the Orange River mouth, South Africa.

Records: South West Africa (28/16/s, 28/13/d); Cape (32/17/s to 34/23/d).

Distribution: Endemic.

Glycera lancadivae Schmarda, 1861

Glycera lancadivae Schmarda, 1861: 95 with text-figs; Fauvel, 1953: 291, fig. 147 g–h; Day, 1962: 641.
Glycera edwardsi Gravier, 1906: 139, pl. 10 figs. 160–162, text-figs. 293–298.

Body pale and up to 90 mm. long. Prostomium indistinctly ringed. Proboscis with slender conical papillae having 16–20 rings, and a few broader forms. Jaw supports with widely divergent, unequal prongs, so deeply divided as to be almost separate. Branchiae absent. Parapodia with two subequal pointed presetal lobes and a low rounded to emarginate postsetal lobe.

Type locality: Ceylon.

Records: Madagascar (i).

Distribution: Tropical Indian Ocean (i, s); New Caledonia (i).

Glycera tesselata Grube, 1863
(fig. 16.2.a–c)

Glycera tesselata Grube, 1863: 41; Fauvel, 1923: 387, fig. 152 a–c.

Body small, 15–35 mm. long with 70–100 segments. Prostomium with 12–14 rings. Proboscis with very long grooved papillae without rings (fig. 16.2.b). Jaw supports (fig. 16.2.a) forked with one short limb and a very deep notch between it and the longer limb. Presetal lobes of parapodia triangular and equal; postsetal lobes (fig. 16.2.c) shorter, rounded and equal. No branchiae.

Type locality: Mediterranean Sea.

Records: Madagascar (i).

Distribution: Atlantic from Scotland (s, d) to Morocco (s, d); North Carolina (s); ? tropical W. Africa (i); Mediterranean (s); Red Sea (i); Tropical Indian Ocean (i, s); Japan; W. Canada to Southern California (d, vd).

*Glycera prashadi** Fauvel, 1932
(fig. 16.2.d–f)

Glycera parashadi Fauvel, 1932: 126, pl. 5 figs. 1–8.
Glycera prashadi: Day, 1951: 35; Fauvel, 1953: 294, fig. 150 a–h.
Glycera cirrata: (non Grube) Fauvel, 1932: 129, fig. 18 a–e; Day, 1953: 430.
Glycera convoluta var. *capensis* Monro, 1933: 499, fig. 12; Day, 1934: 47.

Length up to 45 mm. Prostomium with about 10 annulations. Papillae on the proboscis (fig. 16.2.e) with a distal flange shaped like a finger-nail. Jaw supports (fig. 16.2.d) with two rami, there being no notch between the short and long ramus. Parapodia (fig. 16.2.f) with two equal, pointed presetal lobes and two shorter, pointed and equal postsetal lobes. Branchiae from the 30th foot and arise from the

*The name *Glycera parashadi* as used by Fauvel (1932: 126) is a typographical error for *G. prashadi*. It is corrected elsewhere in the text and by Fauvel (1953)

dorsal edge of the parapodium at its base and consist of one to five branching filaments.

TYPE LOCALITY: Persian Gulf and Bay of Bengal.

RECORDS: False Bay (34/18/i, s to 34/23/e); Natal (29/31/i) and Mocambique (26/32/i and 23/35/e, s).

DISTRIBUTION: Tropical Indian Ocean (s); Japan.

Glycera convoluta Keferstein, 1862
(fig. 16.2.g–j)

Glycera convoluta Keferstein, 1862: 106; Fauvel, 1923: 383, fig. 150 a–h.

Length up to 120 mm. for 150 segments. Prostomium with 14–16 rings. Papillae on proboscis (fig. 16.2.h) with a distal flange shaped like a finger-nail. Jaw supports (fig. 16.2.g) with two unequal limbs but no notch between them. Parapodia with two equal, pointed presetal lobes. In the middle parapodia (fig. 16.2.i) the superior postsetal lobe is pointed, the inferior one shorter and rounded; this is better marked in posterior feet (fig. 16.2.j). Branchiae start on the 30th foot and arise from the dorsal edge of the parapodium at the level of the parapodial lobes. Each gill is a single filament which is longer than the parapodial lobes.

TYPE LOCALITY: Mediterranean Sea.

RECORDS: South West Africa (22/14/s and 26/15/i, s) south to the Cape (33/18/i, s and 34/22/e, i) and east to Natal (29/31/e, i) and Mocambique (23/35/e, s); Madagascar (i).

DISTRIBUTION: Eastern Atlantic from the English Channel (e, i, s) to tropical western Africa (i) and Tristan da Cunha; Mediterranean; Persian Gulf (s); western Canada to southern California (s, d); Japan.

Glycera alba (Müller, 1788)*
(fig. 16.2.k)

Nereis alba Müller, 1788: 217, pl. 2 figs. 6–7.
Glycera alba: Fauvel, 1923: 385, fig. 150.

Length up to 100 mm. Prostomium with 8–10 rings. Papillae on the proboscis with a distal flange shaped like a finger-nail. Parapodia with two equal, pointed, presetal lobes. Superior postsetal lobe pointed, the inferior one shorter and rounded. Branchiae from 10th foot and arise from the dorsal edge of the parapodium at the level of the presetal lobe. Each branchia is a single filament not longer than the presetal lobe (fig. 16.2.k).

TYPE LOCALITY: Norway.

RECORDS: South West Africa (26/15/i); Cape (34/18/d); Natal (29/31/e); Mocambique (26/32/i, s and 23/35/e, s).

DISTRIBUTION: North-eastern Atlantic from Norway (s, d) to France; Red Sea and tropical Indian Ocean (i, s); Japan.

* This species is doubtfully distinct from *G. convoluta* Keferstein.

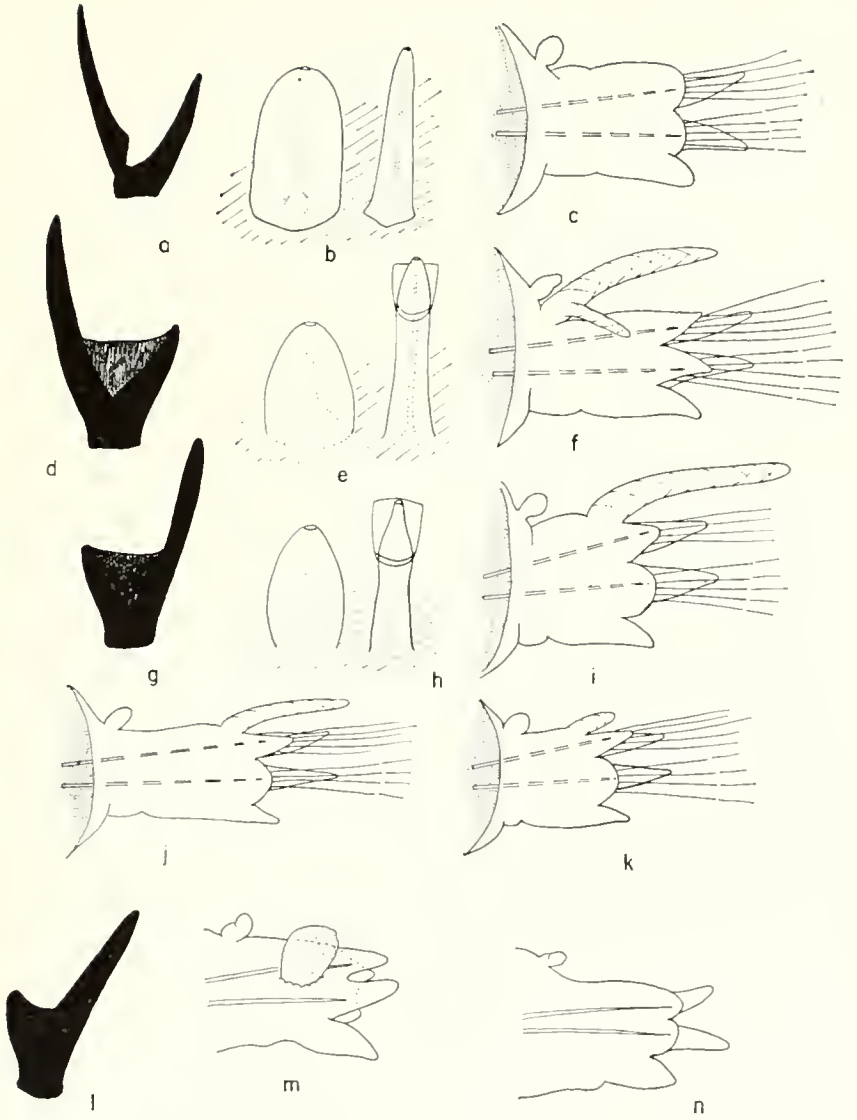

FIG. 16.2. *Glycera tesselata.* (A) Jaw support. (B) Proboscideal papillae. (C) Posterior view of foot. *Glycera prashadi.* (D) Jaw support. (E) Proboscideal papillae. (F) Posterior view of foot. *Glycera convoluta.* (G) Jaw support. (H) Proboscideal papillae. (I) Posterior view of middle foot. (J) Posterior view of posterior foot. *Glycera alba.* (K) Posterior view of middle foot. *Glycera gigantea* (after Fauvel, 1923). (L) Jaw support. (M, N) Anterior and posterior views of middle foot (setae omitted).

Glycera gigantea Quatrefages, 1865
(fig. 16.2.l–n)

Glycera gigantea Quatrefages, 1865: 183; Fauvel, 1923: 387, fig. 152 d–k.

Body large, reaching 350 mm. in length with 400 segments. Prostomium large and conical with 12–14 rings. Papillae on proboscis mainly elongate plus a few ovoid forms. Jaw supports (fig. 16.2.l) with only one divergent fork developed. Parapodia (fig. 16.2.m, n) rather small, presetal lobes digitiform, equal. Postsetal lobes low, rounded, not deeply divided; the superior one slightly larger. Dorsal cirrus ovoid and attached well above the foot. Ventral cirrus bluntly triangular. Branchiae retractile, globular and inserted on anterior face of the parapodia.

Type locality: Brehat, N.W. France.

Records: Not recorded from southern Africa.

Distribution: English Channel (i, s); Mediterranean.

Glycera rouxi Audouin & Milne-Edwards, 1833
(fig. 16.3.a–d)

Glycera Rouxii Audouin and Milne-Edwards, 1833: 264; Fauvel, 1923: 389, fig. 153 a–c; Day, 1960: 330.

Body 100–150 mm. long. Prostomium a tapered cone with 10–12 poorly marked rings. Papillae on proboscis (fig. 16.3.a) include numerous smooth conical forms plus a few globular ones. Jaw supports (fig. 16.3.b) with only one well developed prong; the other prong is represented by a triangular basal projection, not separated by a notch from the first. Parapodia (fig. 16.3.c) with presetal lobes equal and pointed. Postsetal lobes shorter than the presetal ones; they are subequal in middle feet but later the superior one becomes longer and pointed and the inferior one shorter and rounded (fig. 16.3.d). Dorsal cirrus ovoid and attached at the base of the foot. Ventral cirrus long, pointed and directed downward. Branchiae retractile, each in the form of a single digitiform lobe arising from the anterior face of the parapodium; they start on the 20th foot.

Type locality: Marseilles, France.

Records: Cape (from 32/17/d to 34/18/s); Natal (29/31/s); Mocambique (26/32/i); Madagascar (i).

Distribution: Eastern Atlantic from Norway (s, d) to Senegal (s); Mediterranean (s); tropical Indian Ocean (s, d, vd); Japan.

Glycera unicornis Savigny, 1818
(fig. 16.3.e–j)

Glycera unicornis Savigny, 1818: 315; Fauvel, 1923: 389, fig. 153 e–i.

Body large, reaching a maximum of 350 mm. Prostomium (fig. 16.3.e) conical with 10–12 rings. Papillae on proboscis (fig. 16.3.f) mainly blunt cones plus a few larger and broader forms. Jaw supports with only one limb prolonged; the other

prong is represented by a triangular basal projection not separated by a notch from the first. Parapodia (fig. 16.3.h) with two equal pointed presetal lobes and two very similar but slightly shorter postsetal lobes, of which the superior becomes slightly longer in posterior feet (fig. 16.3.j). Dorsal cirrus papilliform and attached at the base of the foot. Ventral cirrus triangular. Branchiae appear on the 20th foot as two to three retractile filaments arising from the anterior face of the parapodium. Shafts of compound setae slightly heterogomph (fig. 16.3.i).

Type locality: Mediterranean Sea.

Records: Cape (34/18/i, s, d to 32/28/s); Mocambique (26/32/i).

Distribution: North Atlantic from the English Channel to Morocco (i, s); Mediterranean (i, s); Indian Ocean (d).

Glycera subaenea Grube, 1878
(fig. 16.3.k–n)

Glycera subaenea Grube, 1878: 184, pl. 8 fig. 8; Fauvel, 1919: 425, p. 16 figs. 48–51; Day, 1951: 34.

Length 70–100 mm. Prostomium with eight annulations. Jaw supports (fig. 16.3.l) with one prong well developed and the other short and completely united to the first by an oblique shelf. Proboscis with numerous bluntly conical papillae (fig. 16.3.k) some of which show one or two vague rings while others are subspherical and quite plain. Parapodia (fig. 16.3.m, n) with two long, equal pointed presetal lobes. The superior postsetal lobe is pointed, the inferior one is shorter and blunt. Branchiae from the 12th foot and arise on the anterior face of the foot; they are retractile and have two to five branched, finger-like lobes.

Type locality: Philippine Islands.

Records: Natal (29/31/i, s) north to Mocambique (26/32/i and 23/35/e, s); Madagascar (i, s).

Distribution: Aden (d); Philippine Islands (i); Japan.

GONIADA Audouin & Milne-Edwards, 1833

Body divided into two regions; the anterior one with uniramous feet and the posterior one with biramous feet. Proboscis covered with essentially similar papillae and terminating in a mouth with a pair of large toothed jaws (macrognaths) and a circle of small micrognaths. A longitudinal row of V-shaped chevrons on either side of the base of the proboscis. No branchiae. Notosetae simple; neurosetae compound and spinigerous.

Type species: *Goniada emerita* Audouin & Milne-Edwards, 1833

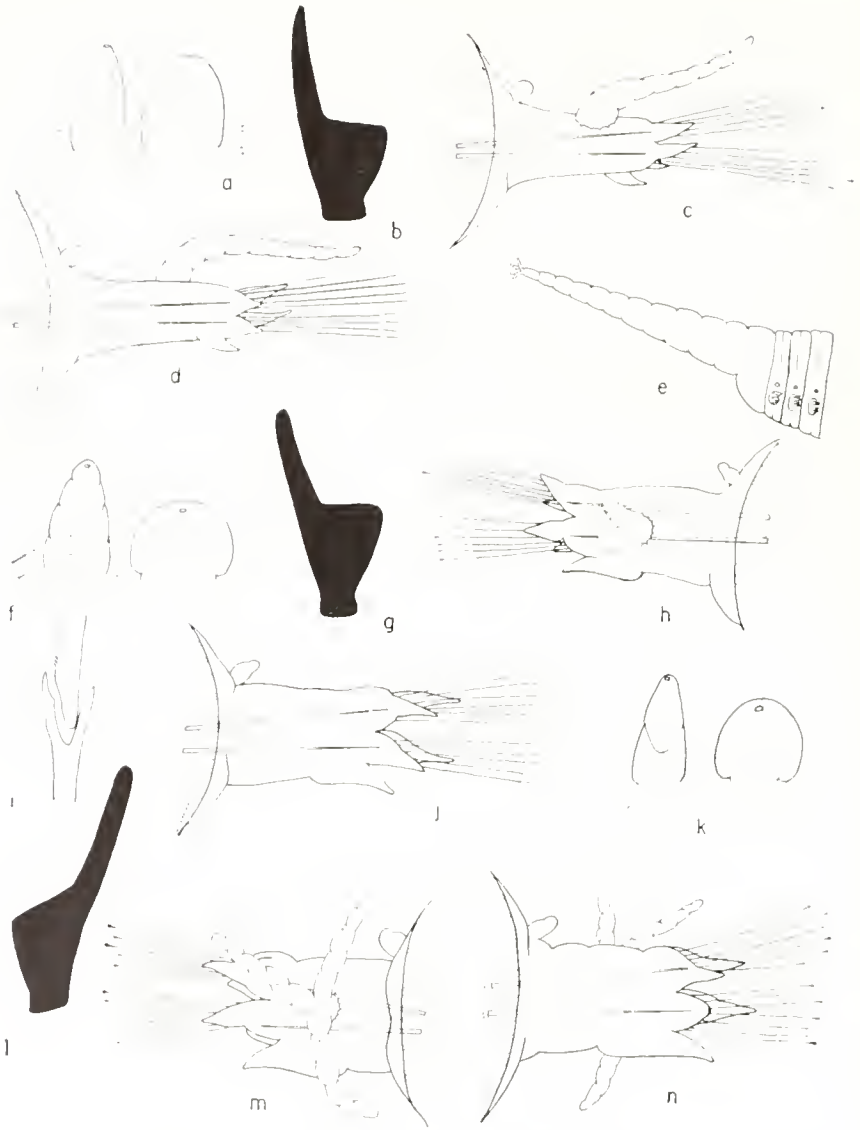

FIG. 16.3. *Glycera rouxi*. (A) Proboscideal papillae. (B) Jaw support. (C) Anterior view of middle foot. (D) Posterior view of posterior foot. *Glycera unicornis*. (E) Prostomium. (F) Proboscideal papillae. (G) Jaw support. (H) Anterior view of middle foot. (I) Shaft-head of neuroseta. (J) Posterior view of posterior foot. *Glycera subaenea*. (K) Proboscideal papillae. (L) Jaw support. (M, N) Anterior and posterior view of middle foot.

Key to Species

1 Notosetae robust, acicular (25–55 X-shaped micrognaths) . . . . . ***G. emerita***
– Notosetae are all capillaries 2
2 Anterior region of 27 setigers. Papillae on proboscis conical and supported by five to six converging plates (fig. 16.4.j) . . . . . ***G. congoensis***
– Anterior region of 35–40 setigers. Papillae on proboscis cordiform (fig. 16.4.l). (Four micrognaths dorsally and three to four ventrally) . . . . . ***G. maculata***

Goniada emerita Audouin & Milne Edwards, 1833
(fig. 16.4.a–i)

Goniada emerita Audouin and Milne-Edwards, 1833: 268; Fauvel, 1923: 391, fig. 154 h–q.

Body (fig. 16.4.a) elongate, tapered at both ends and iridescent brown in alcohol. Length up to 360 mm. Prostomium (fig. 16.4.b) a long cone with about 8–10 annulations and four short antennae but no eyes. Proboscis covered with small rounded papillae with a curved flange around a central pore and groove (fig. 16.4.d); 12–17 chevrons on either side of the base. Macrognaths with four teeth; micrognaths (fig. 16.4.e) 30 above and 15 below (fig. 16.4.c). Anterior region of 60–70 uniramous segments. Anterior feet (fig. 16.4.f)) each with a tapered dorsal cirrus rather flattened at the base, a setigerous lobe with two digitiform presetal lips and a triangular postsetal one and below this a long triangular ventral cirrus. The last few feet before the posterior region are transitional but lack notosetae. Posterior feet (fig. 16.4.g) large, the notopodium having a triangular dorsal cirrus and a very similar inferior lobe; two to three simple blunt acicular setae (fig. 16.4.h) arise from between the two. Neuropodium large with two presetal lobes united at their base and a single postsetal lobe with an expanded base and pointed tip. A triangular ventral cirrus. Neurosetae spinigerous (fig. 16.4.i).

Type locality: Mediterranean Sea.

Records: Cape (33/25/s) and Mocambique (26/33/i); Madagascar (i).

Distribution: N. Atlantic from Scotland (s) to Morocco (s, d); Mediterranean (s); tropical Indian Ocean (e, i); Chatham Is. (s) (New Zealand).

Goniada congoensis Grube, 1877
(fig. 16.4.j)

Goniada congoensis Grube, 1877: 532, Arwidsson, 1898: 41, pl. 2 fig. 34, pl. 4 fig. 62.

Body reddish brown, up to 150 mm. long. Prostomium short, stout, doubtfully annulated but with lateral grooves. Eyes not seen. Proboscis with 14 chevrons and papillae which are in close-set irregular rows and all superficially similar. Each is conical with five to six strap-like glandular structures converging at the apex which has a pore and a curved peak (fig. 16.4.j). Careful examination shows that the ventral rows have two minute curved peaks. Anterior region of 27 uniramous segments. Anterior feet each with a strap-like dorsal cirrus, two tapered presetal lobes, a single triangular postsetal lobe, and a hastate ventral cirrus. Posterior

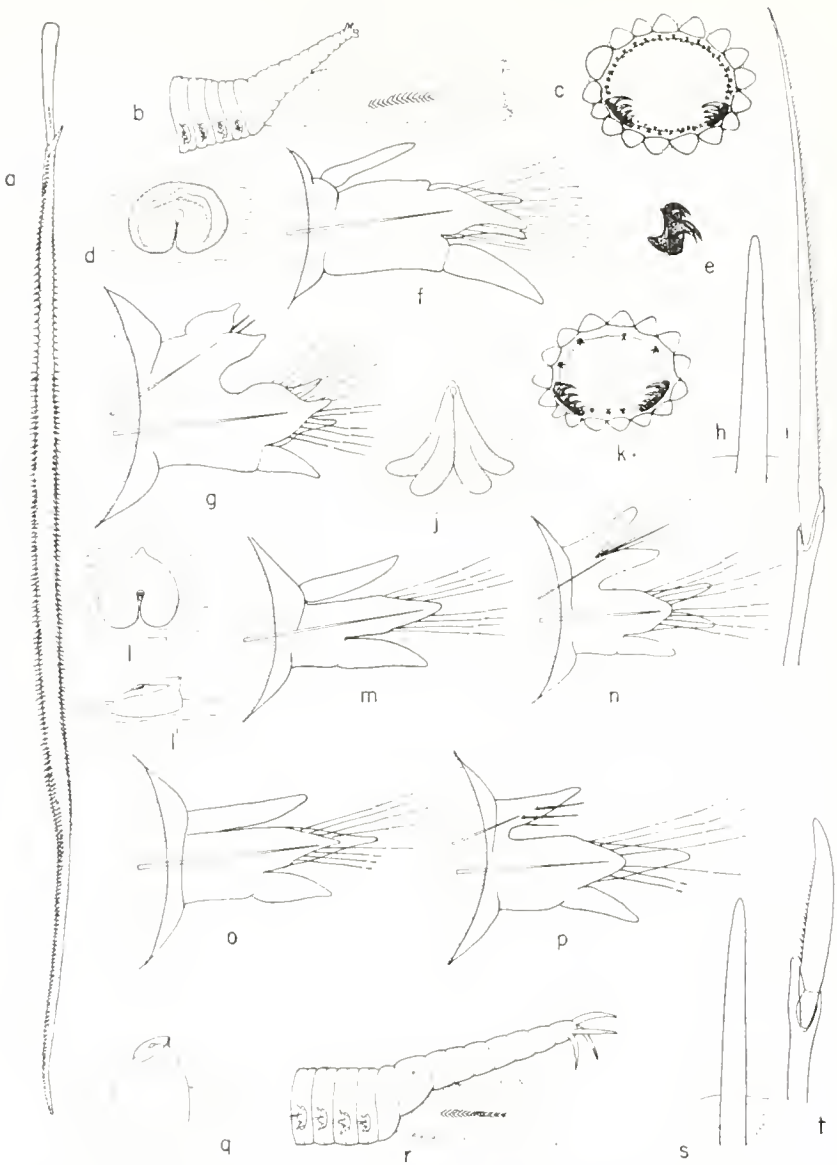

FIG. 16.4. *Goniada emerita*. (A) Entire worm (natural size). (B) Head with proboscis partly everted. (C) Mouth with marginal papillae and jaw elements. (D) Proboscideal papilla. (E) Micrognath. (F) Posterior view of anterior foot. (G) Posterior view of posterior foot. (H) Acicular notoseta. (I) Spinigerous neuroseta. *Goniada congoensis*. (J) Proboscideal papilla. *Goniada maculata*. (K) Arrangement of jaw elements around mouth. (L, L[1]) Plan and profile of proboscideal papilla. (M) Posterior view of anterior foot. (N) Posterior view of posterior foot. *Goniadella gracilis*. (O) Posterior view of anterior foot. (P) Posterior view of posterior foot. (Q) Proboscideal papilla. (R) Head and base of proboscis. (S) Acicular notoseta. (T) Neuropodial falciger.

parapodia biramous. Each notopodium has a lamellar dorsal cirrus and a bilabiate setigerous lobe bearing fine, capillary notosetae. Neuropodia each with two presetal lobes of which the superior is somewhat longer, a single triangular postsetal lobe and a triangular ventral cirrus. Neurosetae are compound and spinigerous.

TYPE LOCALITY: Congo coast.

RECORDS: Not recorded from South Africa.

DISTRIBUTION: Angola (s), Congo.

Goniada maculata Oersted, 1843
(fig. 16.4.k–n)

Goniada maculata Oersted, 1843: 33; Fauvel, 1923: 392, fig. 154 a–g; Hartman, 1950: 20, pl. 1 figs. 7–8.

Body 50–100 mm. long and marked with brown. Prostomium conical with about 8–10 rings but without eyes. Proboscis with 7–11 chevrons and densely covered with low cordate papillae (fig. 16.4.l). Mouth with a dorsal arc of four micrognaths, a ventral arc of three micrognaths and a pair of ventro-lateral macrognaths with four to eight teeth (fig. 16.4.k). The anterior region consists of 35–40 uniramous segments. Each anterior foot (fig. 16.4.m) has a blade-shaped dorsal cirrus, a setigerous lobe in which the pre- and postsetal lobes are fused for the first 18 setigers and a blade-like ventral cirrus. From setiger 19 a second digitiform presetal lobe may be distinguished from the smaller postsetal lip and finally from setiger 31–37 two presetal and one postsetal lips may be seen. Ventral cirri digitiform. The feet of the more flattened posterior biramous region (fig. 16.4.n) have a notopodium with a dorsal cirrus and an inferior setigerous lobe bearing a bundle of capillary notosetae. The neuropodium has two finger-like presetal lobes and a single shorter, bluntly triangular postsetal lobe, a digitiform cirrus and a fan of spinigerous compound setae.

TYPE LOCALITY: Denmark.

RECORDS: Cape (33/17/s, d to 34/26/s).

DISTRIBUTION: Arctic; N. Atlantic from Norway (i, s, d) to the English Channel (i, s) and North Carolina (s); N. Pacific (Alaska to Japan); ? Persian Gulf (s).

GONIADELLA Hartman, 1950

Small worms with the body divided into two regions; the anterior one having uniramous parapodia and the posterior one having biramous parapodia. Proboscis densely covered with similar papillae and terminating in a mouth with a pair of large toothed jaws (macrognaths) and a circle of denticles (micrognaths). A longitudinal row of V-shaped chevrons on either side of the base of the proboscis. No branchiae. Notosetae simple; neurosetae compound and include both spinigers and falcigers in all parapodia.

TYPE SPECIES: *Eone gracilis* Verrill, 1873.

Goniadella gracilis (Verril, 1873)
(fig. 16.4.o–t)

Eone gracilis Verrill, 1873: 596.
Goniadella gracilis: Hartman, 1950: 42, pl. 5 figs. 4–8; Day, 1963a: 408.

Body thread-like, up to 20 mm. long. Prostomium (fig. 16.4.r) with eight rings and a pair of eyes in the basal ring and sometimes in the terminal joint as well. Four slender, biarticulate antennae. Proboscis with 25–30 chevrons at the base. Proboscidial papillae all similar, each broadly conical and obliquely truncate (fig. 16.4.q). Macrognaths with four teeth. Three micrognaths ventrally and a semicircle of about 12 dorsally. Anterior region with 28–30 uniramous segments each biannulate and with a pointed dorsal cirrus, a longer setigerous lobe having a single long presetal projection fused to the shorter postsetal one and a triangular ventral cirrus (fig. 16.4.o). Posterior region (fig. 16.4.p) essentially similar but distinguished by the possession of notosetae, the notopodium corresponding to the dorsal cirrus of the anterior region. One to three notosetae per foot, each a straight, blunt acicular spine (fig. 16.4.s). Setae of the anterior region and neurosetae of the posterior region include three to five spinigers and two to four falcigers per foot. Spinigers have tapering blades and falcigers have short blades (fig. 16.4.t).

Type locality: Dredged off Massachusetts.

Records: Cape (34/18/s and 34/23/s, d to 33/27/s).

Distribution: Atlantic coast of U.S.A.

GONIADOPSIS Fauvel, 1928

The body is divided into three regions. The anterior region has uniramous parapodia and stout falcigerous neurosetae; the middle region has uniramous parapodia and spinigerous neurosetae and the posterior region has biramous parapodia, acicular notosetae and spinigerous, neurosetae. Proboscis without basal chevrons, its surface uniformly papilose and the mouth having a pair of large toothed macrognaths and a circle of small micrognaths.

Type species: *Goniadopsis agnesiae* Fauvel, 1928.

Key to Species

1 Middle region with very long ventral cirri (fig. 16.5.c). Posterior region with two presetal lobes to the neuropodium . . . . . ***G. incerta***
– Middle region with normal ventral cirri (fig. 16.5.j). Posterior region with one presetal lobe to the neuropodium . . . . . ***G. maskallensis***

Goniadopsis incerta Fauvel, 1932
(fig. 16.5.a–g)

Goniadopsis incerta Fauvel, 1932: 122, pl. 4 figs. 1–10; Fauvel, 1953: 286, fig. 146 a–k.

Body 50 mm. long and tapered at either end. Prostomium (fig. 16.5.a) with 10 rings. Proboscis covered with small spherical papillae (fig. 16.5.g). Mouth encircled by a dorsal arc of 14 macrognaths, a pair of macrognaths each with four teeth and a ventral arc of 20 micrognaths. The anterior region consists of 36 uniramous segments each with a flattened lamellar dorsal cirrus (fig. 16.5.b), two presetal and a single postsetal lobe bearing falcigerous setae (fig. 16.5.e) and a cirriform ventral cirrus. The middle region consists of 39 uniramous segments with ventro-lateral parapodia each with a tapered dorsal cirrus (fig. 16.5.c), two conical presetal lobes and a single postsetal one of the same length bearing spinigerous setae and below this a very long ventral cirrus. The posterior region consists of numerous biramous segments (fig. 16.5.f). Notopodia with one presetal and two triangular postsetal lobes bearing acicular notosetae with faintly spoon-shaped ends (fig. 16.5.d). Neuropodia with two presetal lobes and a single triangular postsetal lobe bearing spinigerous neurosetae. Ventral cirrus triangular.

Type locality: 530 fathoms off Burma.

Records: Cape (33/25/e).

Distribution: Burma (vd).

Goniadopsis maskallensis (Gravier, 1904)
(fig. 16.5.h–k)

Glycinde maskallensis Gravier, 1904: 145, pl. 1 figs. 170–174, text-figs. 307–312.
Goniadopsis maskallensis: Day, 1957: 88.

Body slender, up to 75 mm. long and tapered at both ends. Prostomium with about 10 rings and rather long antennae. Proboscis covered with subspherical papillae (fig. 16.5.i). Jaws (macrognaths) with four teeth. Thirteen dorsal micrognaths and nine ventral ones. The anterior region consists of 36 uniramous segments (fig. 16.5.j) each bearing a flattened dorsal cirrus, a single presetal lobe plus a single postsetal lobe bearing a fan of falcigerous setae and a ventral cirrus slightly larger than the setigerous lobe. The change to the middle region is gradual. The middle region consists of 36 uniramous segments each with a flattened dorsal cirrus, a presetal lobe, a fan of spinigerous setae and a rounded postsetal lobe below which is a rather smaller ventral cirrus. The change to the posterior region occurs abruptly at setiger 73. Each posterior parapodium (fig. 16.5.k) consists of two blunt notopodial lobes with one to three stout acicular setae with ends like long spoons (fig. 16.5.h) between them; below the notopodium are the longer presetal and shorter postsetal lobes of the neuropodium bearing a fan of spinigerous compound setae and the rather short ventral cirrus.

Type locality: Red Sea.

Records: Natal (29/31/i).

Distribution: Red Sea (i).

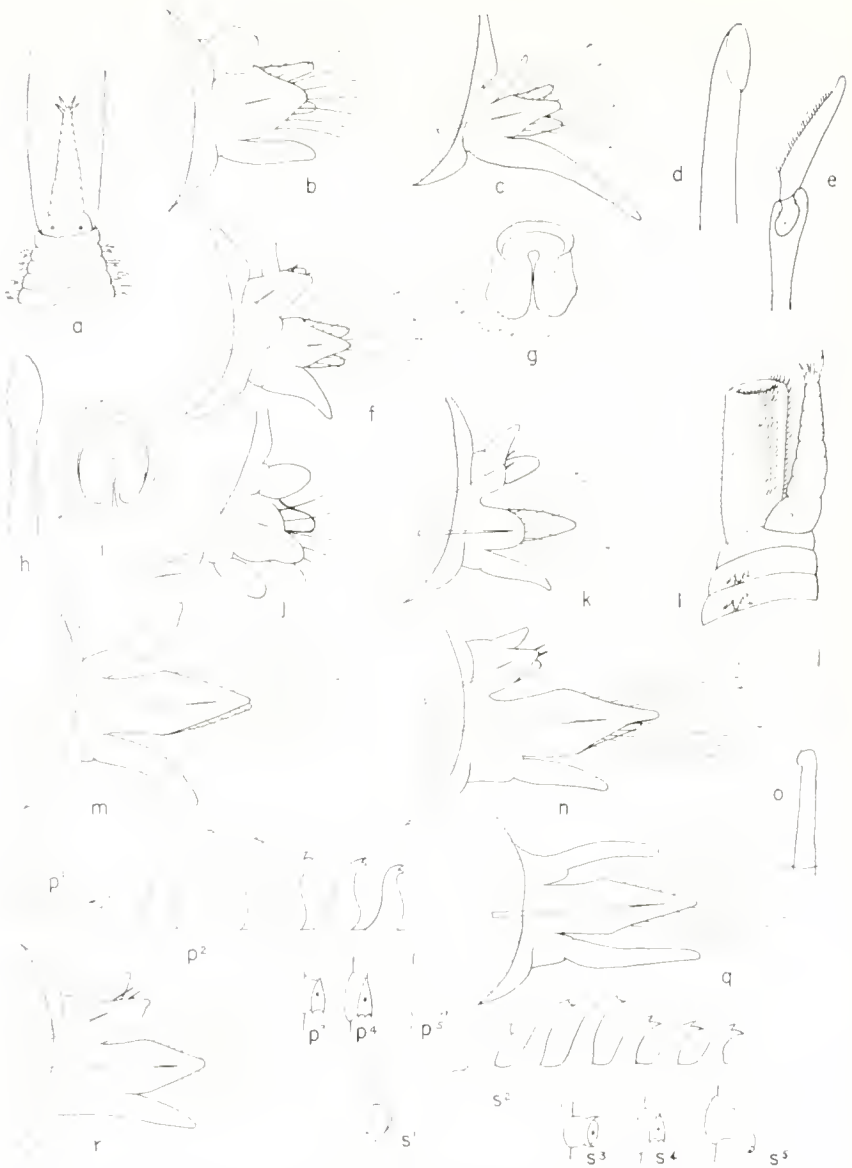

FIG. 16.5. *Gomadopsis incerta*. (A) Head. (B) Posterior view of anterior foot. (C) Posterior view of middle foot. (D) Acicular notoseta. (E) Falcigerous neuroseta. (F) Posterior view of posterior foot. (G) Proboscideal papilla. *Gomadopsis maskallensis*. (H) Acicular notoseta. (I) Proboscideal papilla. (J) Posterior view of anterior foot. (K) Posterior view of posterior foot. *Glycinde kamenniana*. (L) Head with proboscis partly extruded. (M) Anterior view of anterior foot. (N) Anterior view of posterior foot. (O) Acicular notoseta. (p^{1-5}) Proboscideal papillae. *Glycinde capensis*. (Q) Anterior view of anterior foot. (R) Anterior view of posterior foot. (s^{1-5}) Proboscideal papillae.

GLYCINDE Müller, 1858

Body elongate, tapered at both ends and divided into three regions, the anterior one having uniramous parapodia, the middle one having weak notopodia and the posterior one having biramous parapodia. Proboscis without V-shaped chevrons at its base; its surface beset with five types of papillae arranged in longitudinal rows and its mouth encircled with small micrognaths and a pair of large toothed macrognaths.

Type species: *Glycinde multidens* Müller, 1858.

Key to Species

1 About 20 anterior segments. Parapodia with separate pre- and postsetal lobes. Four to five micrognaths . . . . . ***G. kameruniana***

– About 28 anterior segments. Parapodia with fused pre- and postsetal lobes. Over 15 micrognaths . . . . . ***G. capensis***

Glycinde kameruniana Augener, 1918
(fig. 16.5.l–o)

Glycinde kameruniana Augener, 1918: 398, pl. 4 fig. 93, pl. 7 fig. 211; Day, 1960: 332, fig. 8 j–m.

A small, pale species 30–40 mm. long. Prostomium (fig. 16.5.l) with eight rings and one pair of eyes embedded in the basal ring. Proboscis with the usual five longitudinal bands of papillae (fig. 16.5.p). Macrognaths ventral and have four teeth. A dorsal arc of four to five micrognaths. The anterior region consists of 21 uniramous segments (fig. 16.5.m) each with a strap-like dorsal cirrus, a setigerous lobe with a single tapering presetal lobe, a similar, subequal postsetal lobe and a ventral cirrus similar to the dorsal one. From setiger 15–20 the developing notopodium causes a ventral broadening of the dorsal cirrus. Posterior biramous parapodia (fig. 16.5.n) each have a notopodium with a small dorsal cirrus, a minutely bilabiate setigerous lobe and two to three acicular notosetae each with a bluntly hooked apex and a pointed guard (fig. 16.5.o). Posterior neuropodia are essentially similar to the setigerous lobe of the anterior region but the presetal lobe grows longer than the postsetal one. Posterior neurosetae are compound and spinigerous like those of the anterior region.

Type locality: Cameroons, western Africa.

Records: South West Africa (26/14/d and 26/15/s); Cape (34/18/s, 34/21/s, 34/32/s, d).

Distribution: Tropical west Africa (i).

Glycinde capensis Day, 1960
(fig. 16.5.q–s)

Glycinde capensis Day, 1960: 331, fig. 8 f–h.

Body yellowish brown, up to 40 mm. long for 112 segments. Prostomium with 8–10 rings and two pairs of eyes, one in the basal and one in the terminal ring. Proboscis with the usual five bands of papillae, a pair of macrognaths with five

teeth and a dorsal arc of 15–25 micrognaths. The anterior region consists of 28–30 uniramous segments, each parapodium (fig. 16.5.q) having a strap-like dorsal cirrus, a single tapered setigerous lobe formed by the fusion of pre- and postsetal lobes and a ventral cirrus similar to the dorsal one. The base of the dorsal cirrus is expanded inferiorly from the 20th segment onwards. Posterior parapodia (fig. 16.5.r) are biramous, each having a notopodium with a flattened dorsal cirrus and a setigerous lobe with a notch near the tip. Notosetae are acicular with bluntly hooked tips and pointed guards. Posterior neuropodia are essentially similar to the setigerous lobes of the anterior region. The neurosetae are compound and spinigerous.

Type locality: False Bay, South Africa.

Records: Cape (from 34/18/s and 34/23/s, d to 33/27/s); Natal (31/29/s to 29 31/s, d).

Distribution: Endemic.

OPHIOGLYCERA Verrill, 1885

Body divided into three regions: an anterior region with uniramous parapodia, a middle region with developing notopodia and a posterior region with biramous parapodia. Notosetae simple, either slender or acicular. Neurosetae all compound and spinigerous. Proboscis without V-shaped chevrons at its base, and densely covered with similar papillae. Mouth with a pair of toothed jaws and numerous micrognaths.

Type species: *Ophioglycera gigantea* Verrill, 1885.

Ophioglycera eximia (Ehlers, 1901)
(fig. 16.6.a–d)

Gondiada eximia Ehlers, 1901: 157, pl. 20 figs. 7–17 (partim); Monro, 1936: 141, fig. 25 a–j.
Ophioglycera eximia: Hartman, 1950: 38; Day, 1960: 330.

A very large species, up to 760 mm. long by 13 mm., rather flattened and tapered at each end. Prostomium small, conical and with eight rings. No eyes. Proboscis covered with rounded papillae with oblique flanges (fig. 16.6.a). Macrognaths with four to five teeth. A circle of 25 larger micrognaths plus a few smaller ones. Anterior region of 59 uniramous setigers (fig. 16.6.b) each bearing a flattened, chopper-like dorsal cirrus, two small digitiform presetal lobes plus a longer, triangular postsetal one and below this a blade-like ventral cirrus. Setae compound and spinigerous. The middle region consists of developing biramous setigers (fig. 16.6.c) but the notopodia have only a few small simple setae (fig. 16.6.e). Each notopodium consists of a lanceolate dorsal cirrus and a smaller setigerous lobe containing an aciculum and a few small simple capillaries between the two. The neuropodium has two presetal lobes and a single triangular postsetal lobe which is slightly longer. The ventral cirrus is long and blade-like. In the posterior region (fig. 16.6.d) the

notopodium is as large as the neuropodium and the capillary notosetae are obvious. The neuropodium has two tapered presetal lobes, a shorter triangular postsetal lobe and a ventral cirrus smaller than that in the mid-region.

TYPE LOCALITY: Terra del Fuego.

RECORDS: Cape (32/17/d and 34/18/s).

DISTRIBUTION: Magellan area (i, s); Falkland Is. (i).

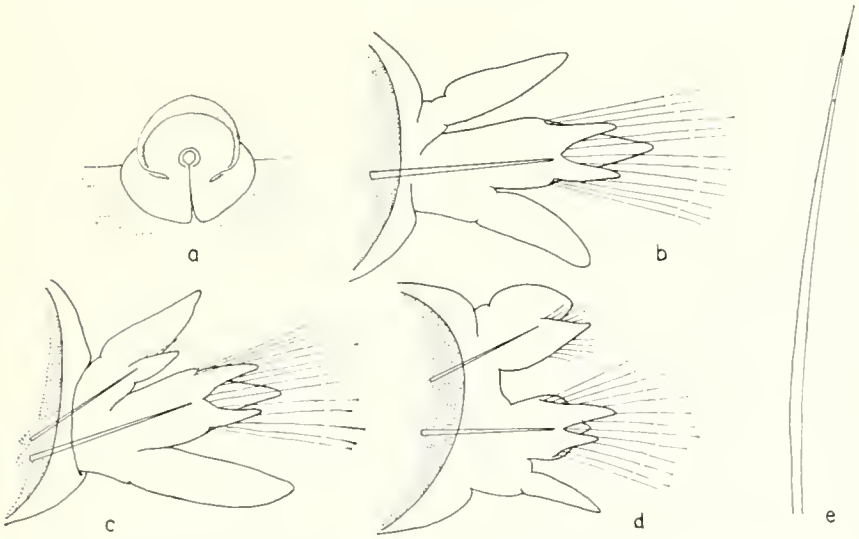

FIG. 16.6. *Ophioglycera eximia*. (A) Proboscideal papilla. (B) Anterior view of anterior foot. (C) Anterior view of middle foot. (D) Anterior view of posterior foot. (E) Notopodial capillary.

Family **EUNICIDAE** Savigny, 1818

Body vermiform and elongate with numerous segments. Head well developed with a distinct prostomium and peristomium. Palps very variable, sometimes digitiform or globular but often partially or completely fused with the lower surface of the prostomium. Nought to seven antennae and one to two pairs of eyes. Pharynx muscular and armed with a ventral pair of mandibles and a dorsal series of toothed maxillary plates. Peristome achaetous and often the next segment as well. A single pair of tentacular cirri may be present or absent. Parapodia uniramous but notopodial acicula may be embedded in the dorsal cirri. Dorsal cirri present or absent. Setigerous lobes with simple and often compound setae as well. Ventral cirri present or absent.

THE CHARACTERS OF THE SUBFAMILIES

An important revision of the whole group will be found in Hartman (1944). Following the work of Kinberg (1865) and Ehlers (1864–68) she has based the main subdivisions on the nature of the jaws. She recognises a superfamily Eunicea containing six families: Eunicidae, Onuphidae, Lysaretidae, Arabellidae, Lumbrineridae and Dorvilleidae. These six divisions of the group are accepted here but they are much more closely related to one another than are other families of the polychaeta such as the Syllidae, Hesionidae and Nereidae and for this reason they are ranked as subfamilies of the single family Eunicidae.

Apart from the nature of the jaws the distinctions between the subfamilies are based on the number of head appendages, the number of anterior apodous segments and the presence or absence of branchiae and dorsal cirri.

The jaws. These should be dissected but not detached from the specimen. A ventral slit is made from the mouth backwards and the pharyngeal muscles freed from the body wall. A cut is then made in the side of the jaw muscles so that the lower jaws or *mandibles* may be folded over to one side and examined from the dorsal surface. The œsophagus is then cut posterior to the jaw musculature and the whole jaw complex pulled forwards until it is attached only at the lips. The remains of the pharyngeal tissue is then cleared away and the upper jaws or *maxillae* examined. Before storage all the parts are folded back into the body cavity for protection. The mandibles of the Dorvilleinae may be dissected in the same way but since the maxillae consists of numerous small, separate elements they are best examined *in situ* on the roof of the buccal cavity.

The upper jaws or maxillae are of four main types. In the Dorvilleinae which is the most primitive subfamily there are two or four longitudinal rows of numerous toothed elements with accessory teeth on the larger ones. In the other five subfamilies there are four or five pairs of *maxillary plates* and two or three posterior *maxillary supports* or *carriers*. The maxillary plates are numbered I to V starting at the posterior end next to the maxillary supports and in the *dental formula* the number of teeth on the left side is shown first. Variations in numbers of teeth are best shown in brackets. Thus MX. I = 1 + 1, II = (5–6) + (6–7), III = 8 + 0, IV = 3 + 10. This means that the first pair of maxillary plates next to the supports has one tooth

on each side. These are usually large and falcate and are sometimes called the *main fangs*, *forceps* or *pincers*. The second and largest pair of plates has five to six teeth on the left side and six to seven on the right. The third pair has eight on the left but the right is absent. The fourth pair has three on the left and 10 on the right. It is obvious that these maxillary plates are asymmetrical. This condition is characteristic of the Eunicinae and Onuphinae where Mx. III and Mx. IV fuse on the right side. In the other subfamilies the maxillary supports are very long and slender and consist of three pieces – a pair of lateral pieces and a shorter unpaired dagger-shaped piece. In the other three subfamilies the maxillary supports are short and broad and there is no third, unpaired piece.

The head appendages. The palps show varying degree of reduction and fusion to the ventral surface of the prostomium. In the Dorvilleinae they are well developed, digitiform organs with a distinct joint near the tip. In the Onuphinae they are separate globular structures. In the Eunicinae they are cushion-like and partially fused to the prostomium so that the latter often appears to be bilobed. In the Lumbrinerinae, Lysaretinae and Arabellinae they have merged completely with the ventral surface of the prostomium. The antennae are also very variable. The number ranges from 7 in the Onuphinae to 0 in the Arabellinae though the number is constant for each genus. Each antenna is usually mounted on a single very short ring but in the Onuphinae there are two short *frontal antennae* and five long *occipital* antennae mounted on long ceratophores which have 4–20 rings and occasionally short lateral branches.

Apodous segments. There may be one or two segments behind the head without parapodia or setae. Tentacular cirri may be present or absent but if there are two apodous segments it is always the second which bears the tentacular cirri.

Dorsal cirri and branchiae. The parapodia are uniramous but if dorsal cirri are present they often contain an internal notopodial aciculum. The branchiae are vascular outgrowths of the dorsal cirri and may be simple and cirriform, pectinately branched or even have spirally arranged filaments. In some genera they are completely absent.

Parasitism. Most of the parasitic polychaets belong to the family Eunicidae and their hosts range from Hydrozoa, other Annelida, Echinodermata and even Pisces. Apart from the Eunicinae and the Onuphinae all the subfamilies include parasitic genera. The jaws are usually simplified, head appendages are reduced or absent and the setae are small. Apart from Histriobdella which is a very doubtful member of the Polychaeta, the segmentation and even the parapodia are surprisingly well defined. In some cases at least, species which are internal parasites as juveniles are free-living as adults.

Key to Subfamilies

1 Maxillae consist of numerous small elements in two or four longitudinal series (fig. 17.1.b). (Two antennae and two cylindrical palps) . . . . . Dorvilleinae (p. 450)

– Maxillae consist of four or five paired plates 2

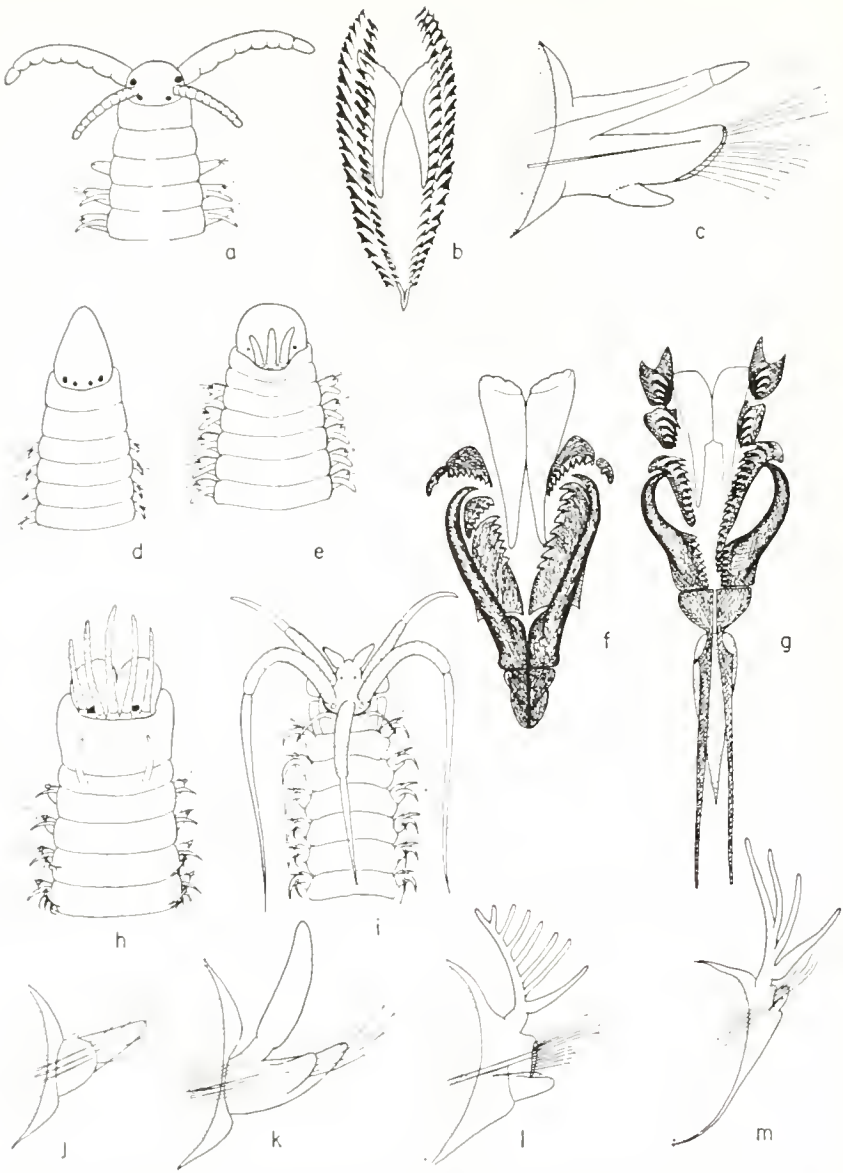

FIG. 17.1. *Characters of subfamilies of Eunicidae.* (A) Head of *Dorvillea.* (B) Jaws of *Dorvillea.* (C) Foot of *Dorvillea.* (D) Head of *Arabella.* (E) Head of *Aglaurides* (Lysaretinae). (F) Jaws of *Eunice.* (G) Jaws of *Arabella.* (H) Head of *Eunice.* (I) Head of *Onuphis.* (J) Foot of *Arabella.* (K) Foot of *Aglaurides* (Lysaretinae). (L) Foot of *Eunice.* (M) Middle foot of *Onuphis.*

2 Two long slender maxillary supports plus a third median piece (fig. 17.1.g). Eyes present) 3
– Two short broad maxillary supports. No third median piece (fig. 17.1.f) 4
3 Antennae absent. Dorsal cirri rudimentary or absent . . . ARABELLINAE (p. 442)
– Three antennae. Dorsal cirri strap-like (fig. 17.1.e, k) . . . LYSARETINAE (p. 425)
4 Dorsal cirri present and usually branchiae as well. One to seven antennae. Maxillary plates III and IV fused on the right side 5
– Dorsal cirri absent or rudimentary. Antennae usually absent. Maxillary plates symmetrical and not fused on the right side. (Eyes absent) . . LUMBRINERINAE (p. 426)
5 Seven antennae, the posterior five having long ringed ceratophores (fig. 17.1.i) ONUPHINAE (p 405)
– One to five antennae, without ringed ceratophores (fig. 17.1.h) . . EUNICINAE (p. 377)

Subfamily **EUNICINAE** Savigny, 1818

Two stout cushion-like palps fused to the prostomium. One to five antennae without long ringed ceratophores. Maxillae with a pair of short broad supports but no median unpaired piece, four to five toothed plates and Mx. III and Mx. IV fused on the right side. Mandibles well developed. Two anterior apodous segments with a pair of tentacular cirri sometimes present on the second. Branchiae either absent, simple or pectinate. Setae include winged capillaries and usually compound setae, comb-setae and acicular setae.

Records from southern Africa

Eunice afra Peters var. *paupera* Grube	1Pi, 27Mi, 40Ni
Eunice afra var. *punctata* Peters. .	45Pi
as *Eunice punctata* Peters . .	1Pi
Eunice antennata (Savigny) . .	27Mi, 28Mi, 36Ni, 40Ni, 41Ci
Eunice aphroditois (Pallas) . .	13Ci, 27Mi, 36Ci, 40Ni, 41Ci, 50Cs
as *Eunice macrobranchia* Schmarda .	4Ci
as *Eriphyle capensis* Kinberg . .	3Ci, 12Ci
as *Eunice kinbergi* Ehlers . .	11Wi, 16Wi
as *Eunice rousseaui* Quatrefages .	33Ci
Eunice australis Quatrefages . .	15Csd, 40Ni, 41Ci, 50Cs, —Psd
as *Eunice murrayi* McIntosh . .	10Cs, 32Cd, 36Ni
Eunice coccinea Grube . . .	26Pi, 27Mi
Eunice filamentosa Grube . . .	26Ai
as *Eunice cirrobranchiata* McIntosh .	32Nd
Eunice (*Nicidion*) *cincta* Kinberg .	?32Ns, 41Ci
as *Eunice filamentosa* (non Grube) .	35Ci
Eunice grubei Gravier . . .	15Cs, —Ps, —Ms
Eunice indica Kinberg . . .	21Ci, 27Mi, 28Mi
Eunice norvegica (Linn.) . . .	
as *Eunice floridana* (Pourtales) .	32Pi, 50Cd

Eunice pennata (Müller) . . . 50Csd
as *Eunice savignyi* (non Grube) . 15Cd
as *Leodice langi* Treadwell . . 39Cd
Eunice (Palolo) siciliensis Grube . 36Ns, 27Mi, 28Mi, 40Ni, 41Ni
Eunice simplex Peters . . . 1Pi
Eunice tentaculata Quatrefages . . 40Pi, —Pd, —Ms
Eunice torquata Quatrefages . . 26Ai
Eunice tubifex Crossland . . . 40NiPi, —Pd
as *Eunice depressa* (non Schmarda) 32Ni
Eunice vittata (Delle Chiaje) . . 31As, 41Ci, 50Csd
as *Eunice murrayi* (non McIntosh) . 33Cs
Lysidice collaris Grube . . . 27Mi, 28Mi, 40Ni, 41Ci
Lysidice natalensis (Kinberg) . . 40Ni, 41Ci, 50NsCs
as *Lysidice natalensis* Kinberg . 3Ni
as *Lysidice capensis* Grube . . 8Ci, 9Ci, 13Ci, 12Ci, 15Cs, 35Ci, 36Ci
as *Lysidice atra* Schmarda . . 4Ci
Lysidice ninetta Audouin & Milne Edwards 26Ai
Marphysa acicularum Webster var. . 32Pi
Marphysa bifurcata Kott . . . 45Pi
Marphysa capensis (Schmarda) . . 12Ci, 26Wis, 41Ci, 50Cs
as *Eunice capensis* Schmarda . . 4Ci
Marphysa corallina (Kinberg) . . 27Mi, 28Mi, 40Ni, 41Ci, 45Pi
as *Marphysa aenea* (Blanchard) . 36NiCi
Marphysa depressa (Schmarda) . . 41Ci, 45Ni, 50Cs
Marphysa macintoshi Crossland . . 40Ni
as *Marphysa simplex* Crossland (non Langerhans) . . . 40Ni, 45NiPi
as *Marphysa durbanensis* Day. . 36Ni
Marphysa mossambica (Peters) . .
as *Eunice mossambica* Peters . . 1Pi
Marphysa posterobranchia Day . .
as *Marphysa* sp. 50Cs
Marphysa purcellana Willey . . 12Ci, 41Ci, 50Cs, 56Ws
Marphysa sanguinea (Montagu) . 11Wi, 13Ci, 16Wi, 26Wi, 32Ci, 36Ci, 41Ci, 50Cs
as *Marphysa haemasoma* Quatrefages 6Ci
as *Marphysa sanguinea haemasoma* Quatrefages 12Ci
Nematonereis unicornis Schmarda . 28Mi, 40Ni
Nematonereis sp. 10Ci

BIOLOGICAL NOTES

Eunice, *Marphysa* and allied genera occupy diverse habitats and eat a wide range of foods. *Eunice aphroditois* which grows to over a metre in length, is an errant form as a juvenile when it creeps about under stones, old shells and among the holdfasts of algae. As it grows larger it makes a more permanent burrow under muddy stones and the biggest worms make a sort of papery tube. *Eunice norvegica* makes a much tougher tube attached to stones and the tropical *Eunice tubifex* makes a parchment-like tube which projects out from a crevice between corals often becoming overgrown with hydroids and bryozoa. The tube has several short branches through any of which the worm protrudes its head in search of prey. *Lysidice* is a more sluggish worm; it has powerful gouge-like mandibles and is able to burrow in dead coral on which it feeds. The Cape species *L. natalensis* is common under the massed tests of the giant ascidian *Pyura*.

While most species of *Eunice* are found in rocky habitats, *Marphysa* usually burrows in sand or mud and is seldom found below low tide. *M. depressa* is present in enormous numbers in the sheltered sandbanks of Langebaan Lagoon and *M. macintoshi* occurs in the same habitat along the tropical shores of East Africa from Natal northward. *M. mossambica* is capable of tolerating very low oxygen tensions and forms dense colonies in the evil-smelling black mud of tropical estuaries and mangrove swamps. The best known is *M. sanguinea* which burrows in *Zostera* beds all over the world. All these species are omnivorous and live largely on detritus.

THE MAIN DIAGNOSTIC CHARACTERS

The few genera are easily distinguished by the number of antennae, the presence or absence of tentacular cirri and the branchiae. The identification of species is more difficult.

Jaws. Neither the mandibles nor the number of teeth on the maxillary plates have proved to be of much value except in the genus *Lysidice*. None the less some species (e.g. *Eunice siciliensis*) always has very few teeth on Mx. II.

Prostomium and palps. The two cushion-like palps on the antero-ventral surface of the prostomium commonly give the latter a bilobed appearance. A quadrilobed appearance is probably due to shrinkage on preservation but in some species the two palps are completely fused one to the other and the anterior margin of the prostomium then appears to be smoothly rounded.

Antennae. These may be smooth or ringed and they vary considerably in length. In some species the antennae are so deeply ringed that they appear beaded or *moniliform* (fig. 17.1.h). A smooth antenna may however be wrinkled due to preservation and this may cause confusion, similarly the length varies so much with the state of contraction that only major differences are significant. The same applies to the tentacular cirri.

Branchiae. In some genera branchiae are absent, but when present they arise from the dorsal cirri and vary from simple filaments to pectinately branced structures

with over 20 filaments in a comb-like series. Branchiae may appear as early as setiger 3 but in other species they appear much later. They may also be confined to the anterior half of the worm or continue to near the posterior end. In large specimens there are usually more filaments and the first branchia appears later. It would also appear that the animal is able to "count more accurately" nearer the head than further back. Thus a species whose first gill typically appears on setiger 3 may occasionally have the first one on setiger 4 or even 5 while one whose gills normally start on setiger 20 may have the first gill anywhere between setiger 15 and 30.

Acicula, acicular setae and setae. The colour of the acicula and acicular setae, whether pale or dark has proved to be a valuable specific character when the middle foot of an adult-specimen is examined but this character must be used with caution for the acicula are paler in young specimens and in the more anterior feet. The acicula themselves are usually bluntly pointed but exceptionally they have knobbed ends which are characteristic. The acicular setae are most useful for they may be unidentate, bidentate or tridentate. Unfortunately the acicular setae have the teeth edge-on when the parapodium is mounted on a slide and it may be necessary to remove the acicular seta and lay it on its side to see the real number of teeth. Only the major differences in the setae are useful. Thus the presence or absence of comb-setae and obvious differences such as spinigerous and not falcigerous compound setae are useful but the exact shape of the blade is seldom diagnostic.

Key to Genera

1	Five antennae. Branchiae usually present	2
–	One or three antennae. Branchiae and tentacular cirri absent	4
2	Tentacular cirri and branchiae present	***EUNICE*** (p. 380)
–	Tentacular cirri absent	3
3	Branchiae present	***MARPHYSA*** (p. 393)
–	Branchiae absent	***PARAMARPHYSA****
4	One antenna	***NEMATONEREIS*** (p. 403)
–	Three antennae	***LYSIDICE*** (p. 400)

EUNICE Cuvier, 1817

Prostomium with five antennae without ringed ceratophores. Two partially fused, cushion-like palps on the antero-ventral margin of the prostomium. A pair of tentacular cirri on the second apodus segment. Parapodia uniramous with tapered dorsal cirri, a blunt setigerous lobe and broadly conical ventral cirri. Branchiae arise from the dorsal cirri and may be simple or pectinate. Setae usually include simple limbate capillaries and comb-setae superiorly and compound setae inferiorly with one or more acicular setae at the base of the series.

Type species: *Nereis aphroditois* Pallas, 1788.

Key to Species

1 Gills either absent or with one to two filaments starting behind the 40th to 60th setiger 2
– Gills always present and have three or more filaments starting in front of the 30th to 50th setiger 3
2 Comb and acicular setae absent; acicula stout, dark brown ***E.* (*Palolo*) *siciliensis*** (p. 382)
– Comb and acicular setae (fig. 17.2.i) present; acicula and acicular setae yellow ***E.* (*Nicidion*) *cincta*** (p. 382)
3 Acicular setae tridentate (fig. 17.2.s) 4
– Acicular setae bidentate (fig. 17.2.i) 7
– Acicular setae unidentate and black (fig. 17.4.j). (Gills from fifth setiger and continue to end of body) . . . . . ***E. schemacephala**** (p. 384)
4 Gills absent in posterior half of body 5
– Gills start on fourth to seventh foot and may have more filaments on posterior segments than in middle of body; (antennae deeply annulated (fig. 17.2.l); acicula yellow with curved, biloped tips (fig. 17.2.o)) . . . . . ***E. antennata*** (p. 384)
5 Antennae deeply jointed; falcigers with normal rounded guards (fig. 17.2.p); gills start between the third and eighth foot . . . . . ***E. australis*** (p. 385)
– Antennae nearly or quite smooth; falcigers with sharp pointed guards (fig. 17.3.d); gills start on third to fourth foot 6
6 Third to fifth dorsal cirrus more than twice the length of the foot (fig. 17.3.a); middle feet with one or sometimes two acicular setae (fig. 17.3.b) . . . ***E. vittata*** (p. 385)
– Third to fifth dorsal cirrus less than twice the length of the foot (fig. 17.3.q); middle feet with three to five acicular setae (fig. 17.3.f) . . . . . ***E. indica*** (p. 386)
7 Tube tough and parchment-like (fig. 17.3.r). (Acicular setae black) 8
– Tube friable or absent. 9
8 Compound setae spinigerous anteriorly and falcigerous posteriorly (fig. 17.3.q, o). Branchiae from setiger 20 or later . . . . . ***E. tubifex*** (p. 386)
– Compound setae falcigerous and bidentate throughout (fig. 17.3.u). Branchiae from the seventh to tenth foot . . . . . ***E. norvegica*** (p. 388)
9 Gills restricted to anterior half of body; (acicular setae yellow) 10
– Gills extend to near end of body 11
10 Gills start on third to fourth foot; antennae faintly annulated distally (fig. 17.4.a) ***E. pennata*** (p. 388)
— Gills start on sixth to seventh foot; antennae smooth (head and anterior segments red when fresh) . . . . . ***E. coccinea*** (p. 389)
11 Gills start before ninth foot 12
— Gills start behind ninth foot 15
12 Antennae wrinkled or smooth; gills start on fifth to eighth foot; a large species with up to 20 gill filaments (fig. 17.4.l) . . . . . ***E. aphroditois*** (p. 389)
— Antennae annulated; gills start on sixth foot or earlier 13
13 Dorsal cirri annulated (gills from third or fourth foot and attain over ten filaments (fig. 17.4.r) . . . . . ***E. torquata*** (p. 389)
— Dorsal cirri smooth 14
14 Gills from third to sixth foot and attain six or more filaments; antennae moniliform (fig. 17.4.s). Acicula black. . . . . ***E. tentaculata*** (p. 391)
— Gills from third to fourth foot with five to eight filaments; antennae not strongly ringed. Acicula brown. (These species may be identical) . . . ***E. grubei*** (p. 391)
15 Acicular end in a fist-like knob (fig. 1.5). (Branchiae start after 20th foot) ***E. filamentosa*** (p. 392)
— Acicula bluntly pointed. (*E. afra*) 16
16 Branchiae start before the 18th foot. Body with punctuate spots ***E. afra punctata*** (p. 393)
— Branchiae start after the 18th foot. Body uniform brown. . ***E. afra paupera*** (p. 393)

Eunice (*Palolo*) *siciliensis* Grube, 1840
(fig. 17.2.a–f)

Eunice siciliensis Grube, 1840: 83; Fauvel, 1923: 405, fig. 159 e–m; Gravier, 1900: 261, pl. 13 figs. 78–79, text-figs. 130–133.

Body up to 300 mm. long with the anterior region tough and cylindrical and the posterior region soft and rather flattened. Anterior margin of head (fig. 17.2.a) notched between the rounded palps. Antennae rather short, barely extending beyond the palps and often wrinkled when preserved. Tentacular cirri smooth. Mandibles (fig. 17.2.e) large, gouge-shaped, often heavily calcified. Maxillae with only a few large teeth; maxillary formula: Mx. I = 1 + 1; Mx. II = (2–3) + (2–3); Mx. III = 1 + 0; Mx. IV = 1 + 1; Mx. V = 1 + 1. Dorsal cirri smooth. Gills absent in small (25 mm.) specimens and do not appear before the 60th setiger or even behind the 100th in adults; even then only one or at most two filaments are present. Acicula black with slightly bent, blunt tips (fig. 17.2.e). No acicular setae or comb-setae; superior setae are simple, narrow-winged capillaries with pilose blades (fig. 17.2.d) and inferior ones are compound bidentate falcigers with short blades (fig. 17,2,f).

Type locality: Sicily and Adriatic Sea.

Records: Cape (28/32/i); Natal (30/30/i, 29/31/i, s and 28/32/i); Mocambique (26/32/i, 24/34/s); Madagascar (i, s).

Distribution: Tropical Atlantic (Gulf of Mexico and western Africa (i, s)); Mediterranean (s, d); tropical Indo-west-Pacific (i, s).

Eunice (*Nicidion*) *cincta* (Kinberg, 1865)
(fig. 17.2.g–j)

Nicidion cincta Kinberg, 1865: 564; Kinberg, 1910: 43, pl. 16 fig. 21.
Eunice (*Nicidion*) *cincta*: Hartman, 1948: 80, pl. 11 figs. 10–12; Fauvel, 1950: 362 (with synonymy); Day, 1953: 433.

Body rounded anteriorly; length up to 120 mm. Anterior margin of head (fig. 17.2.g) deeply bilobed. Antennae subequal, one to five times prostomial length. Peristomial segment long and bears a pair of very small tentacular cirri. Branchiae entirely absent in small specimens of 25 mm. but represented by one or two filaments on far posterior segments after the 50th foot of adults. Acicula (fig. 17.2.h) stout, pale brown and bluntly pointed. Acicular setae (fig. 17.2.i) yellow with two small blunt teeth and small guards. Compound setae falcigerous with small bidentate blades (fig. 17.2.j). Comb setae present.

Type locality: Society Islands, Pacific.

Records: Cape (from 34/20/i to 32/28/i); Natal (29/31/s).

Distribution: South Pacific (i); Indian Ocean; Senegal.

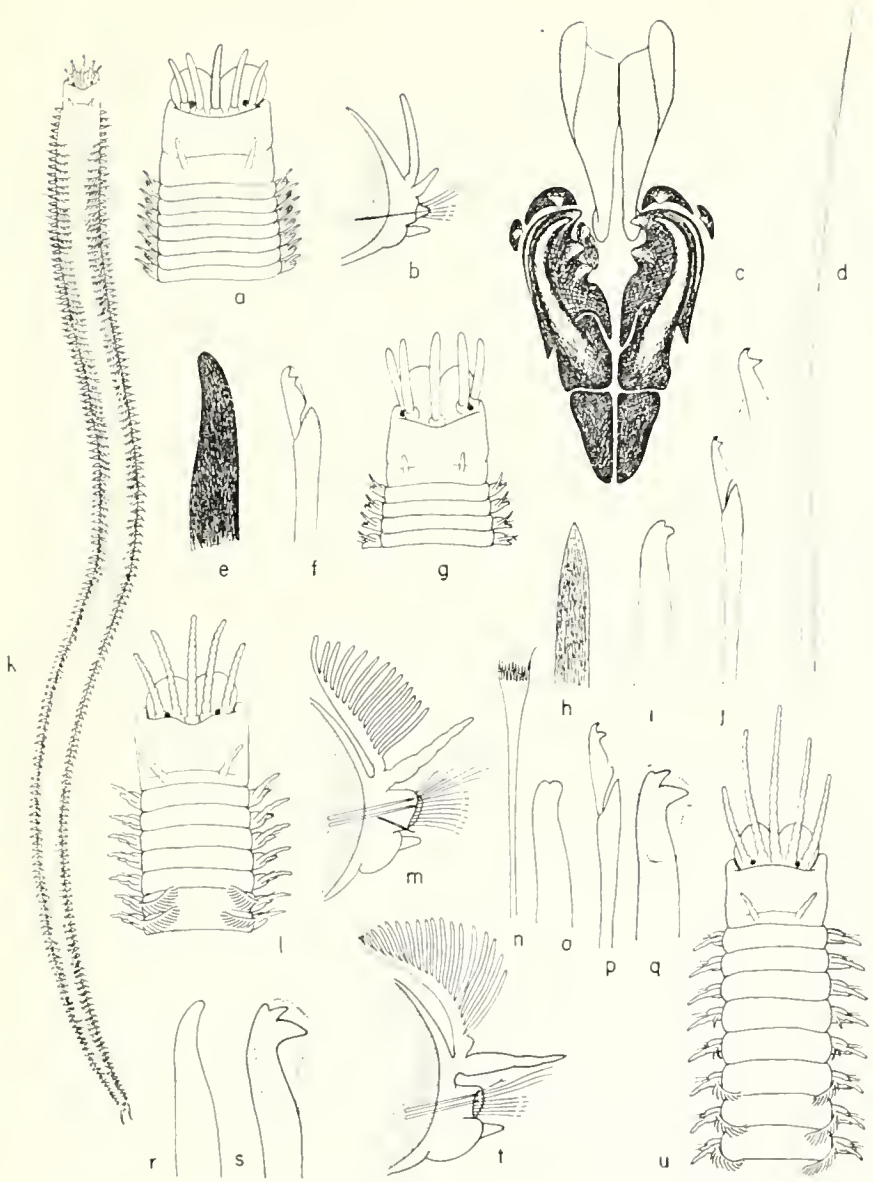

FIG. 17.2. *Eunice siciliensis.* (A) Head. (B) Eightieth foot. (C) Jaws. (D) Simple capillary seta. (E) End of aciculum. (F) Compound seta. *Eunice cincta.* (G) Head. (H) End of aciculum. (I) Acicular seta. (J) Compound seta. *Eunice antennata.* (K) Entire worm (1.5 times life size). (L) Anterior end. (M) Thirty-fifth foot. (N) Comb seta. (O) Tip of aciculum. (P) Compound seta. (Q) Acicular seta. *Eunice australis.* (R) Tip of aciculum. (S) Acicular seta. (T) Twenty-fifth foot. (U) Anterior end.

Eunice schemacephala Schmarda, 1861
(fig. 17.4.g–k)

Eunice Schemacephala Schmarda, 1861: 132, pl. 32, fig. 260 & text figs.; Hartman, 1944: 121.

Length 70–90 mm. Body red when alive but dark brown in alcohol. Anterior margin of head deeply notched between the palps. Antennae (fig. 17.4.h) twice as long as the peristome and weakly articulated distally. Tentacular cirri as long as the peristome with three weak joints. Mandibles with calcified cutting edges and straight dark shafts. Maxillae weekly chitinised and brown. Maxillary formula: Mx. I = 1 + 1; Mx. II = 6 + 6; Mx. III = 10 + 0; Mx. IV = 9 + 12; Mx. V = 1 + 1. The first three to four pairs of dorsal cirri twice as long as the setigerous lobe, later ones much shorter and not much stouter than the gill filaments. Gills start on setiger 5 as four filaments, increase to a maximum of eight filaments and persist in reduced numbers to the end of the body. Ventral cirri of branchiferous segments (fig. 17.4.g) short and do not exceed the setigerous lobe. Acicula (fig. 17.4.k) black with blunt ends and, in the middle of the body, usually number two per foot. Acicular setae start about setiger 40 and are characteristically black with simple, very blunt points and lack guards (fig. 17.4.j). Compound setae (fig. 17.4.i) falcigerous with short triangular blades with two poorly marked teeth and no visible guards.

Type locality: Jamaica.

Records: Not recorded from southern Africa.

Distribution: Tropical West Indies (i); tropical East Africa (Mombasa (i)).

Eunice antennata (Savigny, 1820)
(fig. 17.2.k–q)

Leodice antennata Savigny, 1820: 50.
Eunice antennata: Crossland, 1904: 312, pl. 22 figs. 1–7, text-figs. 56–60; Fauvel, 1953: 240, fig. 118 f-g.

Body (fig. 17.2.k) rounded anteriorly, somewhat flattened posteriorly with a median row of pale spots when fresh. Head (fig. 17.2.l) notched between the palps. Jaws normal with four to five teeth on Mx. 2. Antennae and tentacular cirri deeply annulated. Gills start on the fourth to seventh foot, rapidly reach a maximum of 10–18 filaments (fig. 17.2.m), decrease in the middle of the body and may increase again near the end. Falcigerous compound setae (fig. 17.2.p) with bidentate blades. Two yellow acicula with bent, truncate to bilobed, tips (fig. 17.2.o) and two yellow acicular setae with tridentate tips and guards (fig. 17.2.q). The apical tooth is small and when broken the acicular seta appears bidentate.

Type locality: Gulf of Suez.

Records: Cape (32 28 i and 31 21 i); Natal (from 20/31/i to 27/32/i); Mocambique (26/32/i; Madagascar (s).

Distribution: Gulf of Suez (i); Red Sea (i, s); tropical Indo-Pacific (i, s); southern California; Senegal (s); North Carolina (s).

Eunice australis Quatrefages, 1865
(fig. 17.2. r–u)

Eunice australis Quatrefages, 1865: 321; Fauvel, 1953: 240, fig. 118 h–l.
Eunice Murrayi McIntosh 1885: 288, pl. 39 figs. 7–8; pl. 20A figs. 19–20; Crossland 1904: 310; Willey 1905: 281.

Length 50–70 mm. Body reddish brown with pale bars on the tentacular segment and the fifth setiger and white median spots on posterior segments. Anterior margin of head (fig. 17.2.u) deeply notched between the palps. Antennae deeply annulated, the long median measuring twice the breadth of the peristome. Tentacular cirri annulated and barred with brown. Gills begin between the third and eighth foot (usually sixth to seventh), soon increase to a maximum of 18 slender filaments (fig. 17.2.t) then decrease to end about the middle or past the middle of the body. Anterior dorsal cirri stout, barred with brown and weakly annulated. Acicula (fig. 17.2.r) yellow with curved tips. Acicular setae (fig. 17.2.s) yellow and tridentate with small guards and two to four per parapodium starting after the 30th foot.

Type locality: New Zealand.

Records: Cape (34/18/s), 34/23/c and 34/24/i); Natal (30/31/i, s and 29/31/i); Mocambique (24/34/s, 24/35/d, 26/32/i); Madagascar (i, s).

Distribution: Red Sea (s); tropical Indian Ocean (i, s); Australia, New Zealand (s, d).

Eunice vittata (Delle Chiaje, 1825)
(fig. 17.3.a–e)

Nereis vittata Delle Chiaje, 1825: 195.
Eunice vittata: Fauvel, 1923: 404, fig. 158 h–n.

Length about 50 mm. Head (fig. 17.3.a) shallowly notched between the broad palps so that the anterior margin is rounded. Antennae long (equal to 1·5 times the prostomial breadth) and indistinctly ringed distally. Tentacular cirri and the first five to six pairs of dorsal cirri very long and tapered. Maxillary formula: Mx. I = 1 + 1; Mx. II = 9 + 10; Mx. III = 9 + 0; Mx. IV = 10 + 13; Mk. V = 1 + 1. Anterior segments with red-brown bars which fade in alcohol. Branchiae start on setiger 3, attain 10–20 filaments about the 20th setiger and end about the 45th. Posterior feet (fig. 17.3.b) with one or two acicular setae. Acicula (fig. 17.3.c) yellow with faintly curved and blunt tips. Acicular setae (fig. 17.3.e) yellow, and tridentate with the apical tooth small. Falcigerous compound setae (fig. 17.3.d) have bidentate blades with long pointed guards lightly striated near the base.

Type locality: Naples.

Records: Cape (32/16/d to 33/27/s); Natal (29/31/s); Madagascar (i).

Distribution: Atlantic from the English Channel (s) and North Carolina (s) to tropical W. Africa (s, d); Mediterranean (s); southern California; E. Japan.

Eunice indica Kinberg, 1865
(fig. 17.3.f–j)

Eunice indica Kinberg, 1865: 562; Crossland, 1904: 318, pl. 21 figs. 9–12; Fauvel, 1953: 241, fig. 119 g.

Body about 50 mm. long. Head (fig. 17.3.g) small with the palps mainly fused so that the anterior margin is only faintly notched. Antennae smooth and long reaching back to setiger 7; tentacular cirri long and slender. Jaws pale with numerous teeth; maxillary formula: Mx. I = 1 + 1; Mx. II = (9–11) + (8–11); Mx. III = (8–11) + 0; Mx. IV = (7–10) + 13. Anterior dorsal cirri not elongated and not more than 1·5 times the parapodial length. Branchiae from setiger 3 or 4, increase rapidly to 10–15 filaments and are restricted to the anterior part of the body. Acicula almost straight, yellow and blunt (fig. 17.3.h). Compound setae (fig. 17.3.i) bidentate with long pointed guards sriated one margin. Acicular setae (fig. 17.3.j) yellow and boldly tridentate with obvious guards and number four per foot in posterior feet (fig. 17.3.f).

Type locality: Bangka Strait, Sumatra.

Records: ? Cape (34/18/s); Mocambique (25/33/5); Madagascar (i).

Distribution: Red Sea (i, s); tropical Indo-west-Pacific (i, s, d, vd).

Eunice tubifex Crossland, 1904
(fig. 17.3.k–q)

Eunice tubifex Crossland, 1904: 303, pl. 21 figs. 1–8; Day, 1951: 38; Fauvel, 1953: 232, fig. 116 a–g.

Body elongate, reaching 400 mm.; it is rounded anteriorly and rather flattened posteriorly. The whole worm is in a tough, branching parchment-like tube with several openings (fig. 17.3.k). Head (fig. 17.3.l) deeply notched between the palps. Five smooth or slightly wrinkled antennae which reach back to setiger 2. Mandibles strong and calcified. Maxillae well developed. Dental formula: Mx. I = 1 + 1; Mx. II = 6 + 6; Mx. III = 6 + 0; Mx. IV = 3 + 8; Mx. V = 1 + 1. Tentacular cirri short and smooth. All feet in the anterior part of the body (fig.17.3.m) have a brown glandular ridge below the setigerous lobe. Branchiae start on setiger 20–35 according to size, attain a maximum of five filaments (but usually only three) and decrease slightly towards the posterior end. Acicula (fig. 17.3.n) brown with simple blunt tips. Acicular setae (fig. 17.3.p) brown and bidentate with small guards. Compound setae with knife-shaped blades anteriorly (fig. 17.3.q) but falcigerous and bidentate posteriorly (fig. 17.3.o) with both types in middle segments.

Type locality: Zanzibar.

Records: Natal (30/30/i, s and 29/31/i); Mocambique (26/32/i, 26/33/d); Madagascar (i).

Distribution: Tropical Indo-west-Pacific (i, s).

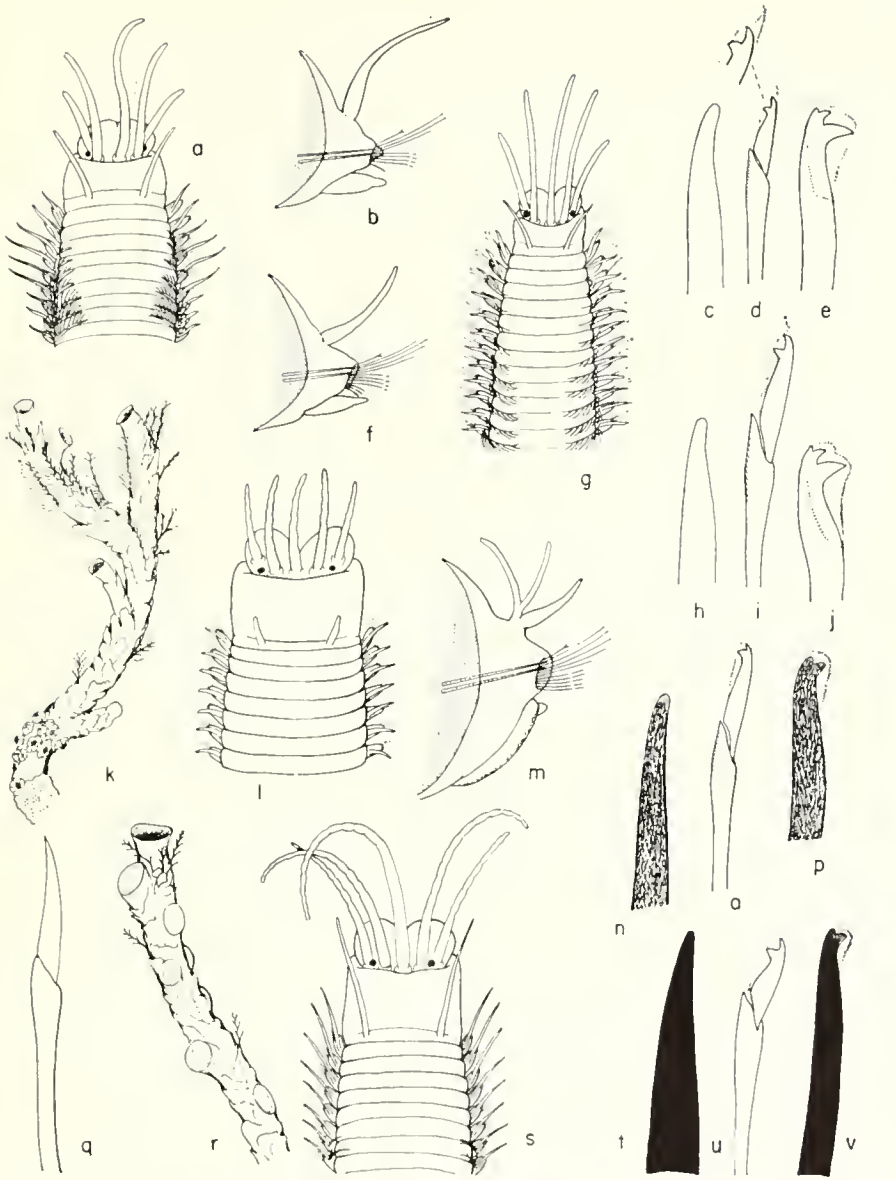

FIG. 17.3. *Eunice vittata*. (A) Head. (B) Posterior foot. (G) Tip of aciculum. (D) Compound seta. (E) Acicular seta. *Eunice indica*. (F) Posterior foot. (G) Head. (H) Tip of aciculum. (I) Compound seta. (J) Acicular seta. *Eunice tubifex*. (K) Tube. (L) Head. (M) Fifthieth foot. (N) Tip of aciculum. (O) Bidentate falciger from posterior foot. (P) Acicular seta. (Q) Spiniger from anterior foot. *Eunice norvegica*. (R) Tube. (S) Head. (T) Tip of aciculum. (U) Compound seta. (V) Acicular seta.

Eunice norvegica (Linnaeus, 1767)
(fig. 17.3.r–v)

Nereis Norvegica Linnaeus, 1767 in Linnaeus, 1788: 3116.
Eunice norvegica: Pettibone, 1963: 240, fig. 63 f.
Eunice floridana (Pourtales): Fauvel, 1923: 402, fig. 157 a–g.

Length 100–200 mm. Tube (fig. 17.3.r) parchment-like with the position of earlier tube mouths now closed obvious on the sides. Anterior margin of head deeply notched between the palps. Antennae (fig. 17.3.s) very long and tapered with long indistinct joints distally and equal to twice the width of the peristome. Maxillary formula: Mx. I = 1 + 1; Mx. II = 5 + 5; Mx. III = (7–10) + 0; Mx. IV = (3–5) + (7–10); Mx. V = 1 + 1. Tentacular cirri long and smooth reaching the anterior margin of the palps; anterior dorsal cirri very long and smooth; later ones shorter. Branchiae start on the 7th–10th setiger, attain four to eight filaments and persist unreduced to the end of the body. Acicula (fig. 17.3.t) black with blunt points. Acicular setae (fig. 17.3.v) black, and bidentate with small guards. Compound setae all falcigerous and bidentate with rounded guards (fig. 17.3.u).

Type locality: Norway.

Records: Cape (29°14′d, 30°15′d).

Distribution: North Atlantic including Norway, W. Iceland (d), Azores (d, vd), Senegal (s), Massachusetts to Gulf of Mexico (d); Mediterranean (?); tropical Indian Ocean (vd).

Eunice pennata (Müller, 1776)
(fig. 17.4.a–f)

Nereis pennata Müller, 1776: 217.
Eunice pennata: Fauvel, 1923: 400, fig. 156 h–o; Day, 1960: 334.

Maximum length 150 mm. but S. African specimens seldom more than 50 mm. Anterior margin of head notched between the palps. Antennae (fig. 17.4.a) long, indistinctly ringed. Tentacular cirri smooth and as long as the peristome. Jaws (fig. 17.4.c) with numerous teeth. Maxillary formula: Mx. I = 1 + 1; Mx. II = (6–8) + (7–10); Mx. III = (8–12) + 0; Mx. IV = (5–9) + (8–12); Mx. V = 1 + 1 (small chitinised areas). Branchiae start on setiger 3–5, increase to a maximum of 12 or more filaments and end about the 40th setiger. Ventral cirri (fig. 17.4.b) well developed. Acicula (fig. 17.4.d) and acicular setae (fig. 17.4.f) yellow: the latter bidentate with guards. Compound setae (fig. 17.4.e) with bluntly pointed guards.

Type locality: Denmark.

Records: Cape (31°16′d to 34°23′d).

Distribution: Arctic (d, vd); abyssal Atlantic from Sweden (d) to Morocco (d); Newfoundland to Florida (s, d, a) and Tristan-da-Cunha (s, d); subantarctic (s, d); Antarctica (a).

Eunice coccinea Grube, 1878

Eunice coccinea Grube, 1878: 153; Crossland, 1904: 297, pl. 20 figs. 6–7, text-figs. 46–51; Fauvel, 1953: 236, fig. 118 a–e.

Body copper-red, about 120 mm. long. Head with a shallow notch between the palps. Antennae smooth, and the median which is the longest is about equal in length to the width of the peristome. Tentacular cirri extend forwards past the prostomial/peristomial junction. Branchiae confined to anterior third of body. The first filament appears on the 5th–9th foot and over the 12th–21st foot there may be as many as 10 filaments more slender than the dorsal cirrus. Acicula black and blunt. Acicular setae black, bidentate. Falcigerous compound setae with short almost triangular blades with poorly marked teeth.

Type locality: Philippine Islands.

Records: Mocambique (26/32/i); Madagascar (i, s).

Distribution: Red Sea (i, s); tropical Indo-west-Pacific (i, s, d); Gulf of Guinea.

Eunice aphroditois (Pallas, 1788)
(fig. 17.4.l–o)

Nereis aphroditois Pallas, 1788: 229.
Eunice rousseaui Quatrefages, 1865: 309; Fauvel, 1923: 403, fig. 158 a–g.

Body reaching 560 mm. long by 20 mm. wide and usually brownish purple with a white head and peristome and a white bar across setiger 4 (fig. 17.4.l). Head with a deep notch between the large palps. Antennae slightly tapered, the median being twice the prostomial length and not ringed though often wrinkled when preserved. Tentacular cirri smooth and shorter than the peristome. Dorsal cirri stouter than branchial filaments. The branchiae start on the 6th–10th foot, they attain a maximum of 20 filaments and decrease slowly to the posterior end. Acicula (fig. 17.4.m) black with pointed ends; acicular setae (fig. 17.4.n) black and bidentate with small guards but may be missing in some specimens. Compound setae (fig. 17.4.o) falcigerous with two well-marked teeth and rounded guards.

Type locality: Indian Ocean.

Records: South West Africa (from (25/14/i) to the Cape (34/18/i, s and 34/23/e)); Natal (30/30/i).

Distribution: Warm North Atlantic from France (i) and West Indies (s) to Morocco; Mediterranean; tropical Indo-west-Pacific to Japan (i); S. California.

Eunice torquata Quatrefages, 1865
(fig. 17.4.p–r)

Eunice torquata Quatrefages, 1865: 312; Fauvel, 1923: 401, fig. 157 h–o.

Length 100–250 mm. Colour reddish brown, often with a white bar on setiger 4. Anterior margin of head deeply notched between the palps. Antennae (fig. 17.4.r) long, with well marked joints. Tentacular cirri jointed, and as long as the peristome.

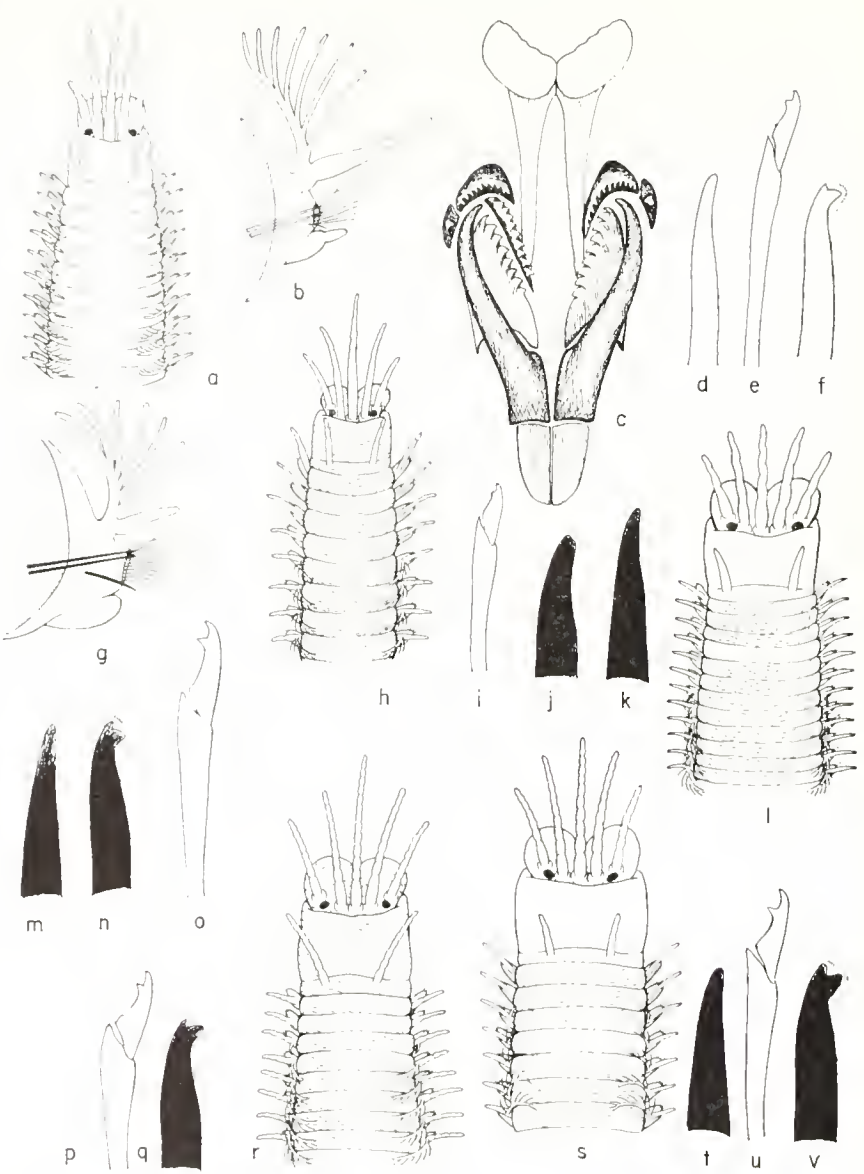

FIG. 17.4. *Eunice pennata*. (A) Head. (B) Twenty-fifth foot. (C) Jaws. (D) Aciculum. (E) Compound seta. (F) Acicular seta. *Eunice schemacephala*. (G) Foot. (H) Head. (I) Compound seta. (J) Acicular seta. (K) Aciculum. *Eunice aphroditois*. (L) Head. (M) Aciculum. (N) Acicular seta. (O) Compound seta. *Eunice torquata* (after Fauvel). (P) Compound seta. (Q) Acicular seta. (R) Head. *Eunice tentaculata*. (S) Head. (T) Aciculum. (U) Compound seta. (V) Acicular seta.

Maxillary formula: Mx. I = 1 + 1; Mx. II = (5–6) + (5–6); Mx. III = (6–7) + 0; Mx. IV = (3–5) + (8–10); Mx. V = 1 + 1. Dorsal cirri jointed. Branchiae from setiger 3, reach a maximum over 10 filaments which are shorter than the dorsal cirri and decrease in number near the posterior end. Acicula and acicular setae black, the latter bidentate with small guards (fig. 17.4.q). Compound setae (fig. 17.4.p) falcigerous and bidentate with two well marked teeth and rounded guards.

Type locality: St. Jean de Luz, France.

Records: Madagascar (s).

Distribution: Atlantic from the English Channel to the Cape Verde Is. (d) and Angola; Mediterranean (s, d).

Eunice tentaculata Quatrefages, 1865
(fig. 17.4.s–v)

Eunice tentaculata Quatrefages, 1865: 317; Fauvel, 1953: 234, fig. 118 m–p.

Maximum size 350 mm. by 15 mm. Head notched deeply between the palps. Maxillary formula: Mx. I = 1 + 1; Mx. II = 6 + 5; Mx. II = 6 + 5; Mx. III = 6 + 0; Mx. IV = 6 + 7; Mx. V = 1 + 1. Antennae and tentacular cirri (fig. 17.4.s) deeply annulated. First three pairs of dorsal cirri twice as long as the feet, subsequent ones shorter. Gills start on the third to fourth foot, increase to six filaments on the sixth foot and attain 6–20 filaments, decreasing slowly to end of body. Acicula (fig. 17.4.t) black with blunt points. Acicular setae (fig. 17.4.v) bidentate with small guards. Compound setae (fig. 17.4.u) falcigerous with two well marked teeth and rounded guards. Colour reddish brown often with a white collar on setiger 4 (*E. torquata* and *E. grubei* are very close).

Type locality: "Western Port", Australia.

Records: Natal (30/30/i, 28/32/i); Mocambique (26/32/i, 26/33/d); Madagascar (s).

Distribution: Tropical Indian Ocean (Laccadive Is. – (d)), India (i, s), Ceylon (i, s), western Australia); New Zealand (s); ? Tasmania (d).

Eunice grubei Gravier, 1900

Eunice grubei Gravier, 1900: 258, pl. 14 figs. 87–88, text-figs. 125–129; Fauvel, 1953: 237, fig. 119 a–e.

Length 150–230 mm. Anterior margin of head notched between the palps. Antennae long, weakly ringed. Peristomial segment long, and bears smooth, slender tentacular cirri. Maxillary formula: Mx. I = 1 + 1; Mx. II = 5 + 5; Mx. III = 7 + 0; Mx. IV = 6 + 9. Anterior dorsal cirri longer than the gills. Branchiae

start on setiger 3, rapidly reach a maximum of eight filaments and then decrease slowly towards the end of body. Acicula and acicular setae brown; the latter bidentate with small guards.

TYPE LOCALITY: Red Sea.

RECORDS: ? Cape (35/22/d); Mocambique (24/35/d); Madagascar (s).

DISTRIBUTION: Red Sea (i); tropical Indo-west-Pacific (i).

Eunice filamentosa Grube, 1856
(fig. 17.5.f–h)

Eunice filamentosa Grube, 1856: 56; Monro, 1933: 65, text-fig. 27; Hartman, 1944: 107, pl. 6 figs. 123–126.

Body about 120 mm. long. Anterior margin of head with a deep notch between the palps. Antennae short, slender, either smooth or wrinkled. Peristome rather long. Tentacular cirri half the length of the peristome. Dental formula: Mx. I = 1 + 1; Mx. II = (4–5 + (3–4); Mx. III = (5–4) + (6–8); Mx. IV = (3–7) + 0. Branchiae start on setiger 26, reach a maximum of three filaments and extend to the end of the body. Acicula (fig. 17.5.f) brownish and end in characteristic fist-shaped knobs; acicular setae (fig. 17.5.h) brown and bidentate with recurved teeth and large guards. Compound setae (fig. 17.5.g) bidentate with rounded guards and well developed teeth.

TYPE LOCALITY: West Indies.

RECORDS: Natal (29/31/d).

DISTRIBUTION: Tropical Atlantic from North Carolina (s) and Florida (i, s) to Ghana (i) and Angola (i).

Eunice afra afra Peters, 1854
(fig. 17.5.a–e)

Eunice afra Peters, 1854: 611; Crossland, 1904: 289, pl. 20 figs. 1–5, text-figs. 43–45; Fauvel, 1953: 235, fig. 116 h–i.

Length 150–250 mm. Head (fig. 17.5.a) notched between the palps. Maxillary formula: Mx. I = 1 + 1; Mx. II = (4–6) + (4–7); Mx. III = (6–8) + 0; Mx. IV = (4–6) + (8–11). Antennae smooth or faintly ringed and a little longer than the peristome. Tentacular cirri shorter than the peristome. Gills start between the 14th and 30th foot; the number of filaments slowly increases to between three and eight (fig. 17.5.b) and then decreases towards the posterior end. Acicula (fig. 17.5.c) two to three per foot, yellow in juveniles, becoming blackened near the tip in adults. Acicular setae (fig. 17.5.e) dark brown near the tip, weakly bidentate with small

guards in juveniles, but without guards in adults. Compound setae (fig. 17.5.d) bidentate with well marked teeth and rounded guards.

TYPE LOCALITY: Mocambique.

RECORDS: Cape (32/28/i and 31/29/i); Natal (30/30/i and 28/32/i); Mocambique (27/32/i and 26/32/i); Madagascar (i).

DISTRIBUTION: Gulf of Suez (i); Red Sea and tropical Indo-west-Pacific (d).

Eunice afra punctata Peters, 1854

Eunice punctata Peters, 1854: 611.
Eunice afra var. *punctata*: Day, 1957: 89.

Body brown, dotted with tiny white spots when fresh and sometimes a white bar across setiger 4. Gills start about the 15th–17th setiger and reach a maximum of three to eight filaments.

TYPE LOCALITY: Mocambique.

Eunice afra paupera Grube, 1878

Eunice paupera Grube, 1878: 160.
Eunice afra var. *paupera*: Fauvel, 1932: 135.

Body uniform brown, up to 250 mm. long. Gills start between the 19th and 40th foot and have two to four filaments.

TYPE LOCALITY: Philippine Islands.

MARPHYSA Quatrefages, 1865

Two cushion-like palps which may be partly or completely fused so that the anterior margin of the head is bilobed or rounded. Two eyes. Five antennae; two anterior apodous segments; no tentacular cirri. Upper jaws of four to five pairs of toothed plates. Branchiae simple or pectinate. Setae include simple capillaries, comb-setae and usually compound setae which may be falcigerous, spinigerous or both.

TYPE SPECIES: *Nereis sanguinea* Montagu, 1815.

KEY TO SPECIES

1 Inferior setae as simple capillaries (fig. 17.5.m); comb setae absent — *M. mossambica* (p. 395)
– Inferior setae compound; comb setae present 2
2 Compound setae spinigerous only 3
– Compound setae falcigerous only 4
– Compound setae both spinigerous and falcigerous (fig. 17.5.r, t) . . — *M. depressa* (p. 395)
3 Acicular setae bidentate (fig. 17.5.w); body broad and oval in section (fig. 17.5.u) — *M. sanguinea* (p. 396)
– Acicular setae unidentate (fig. 17.6.c); body rounded in section . — *M. macintoshi* (p. 397)

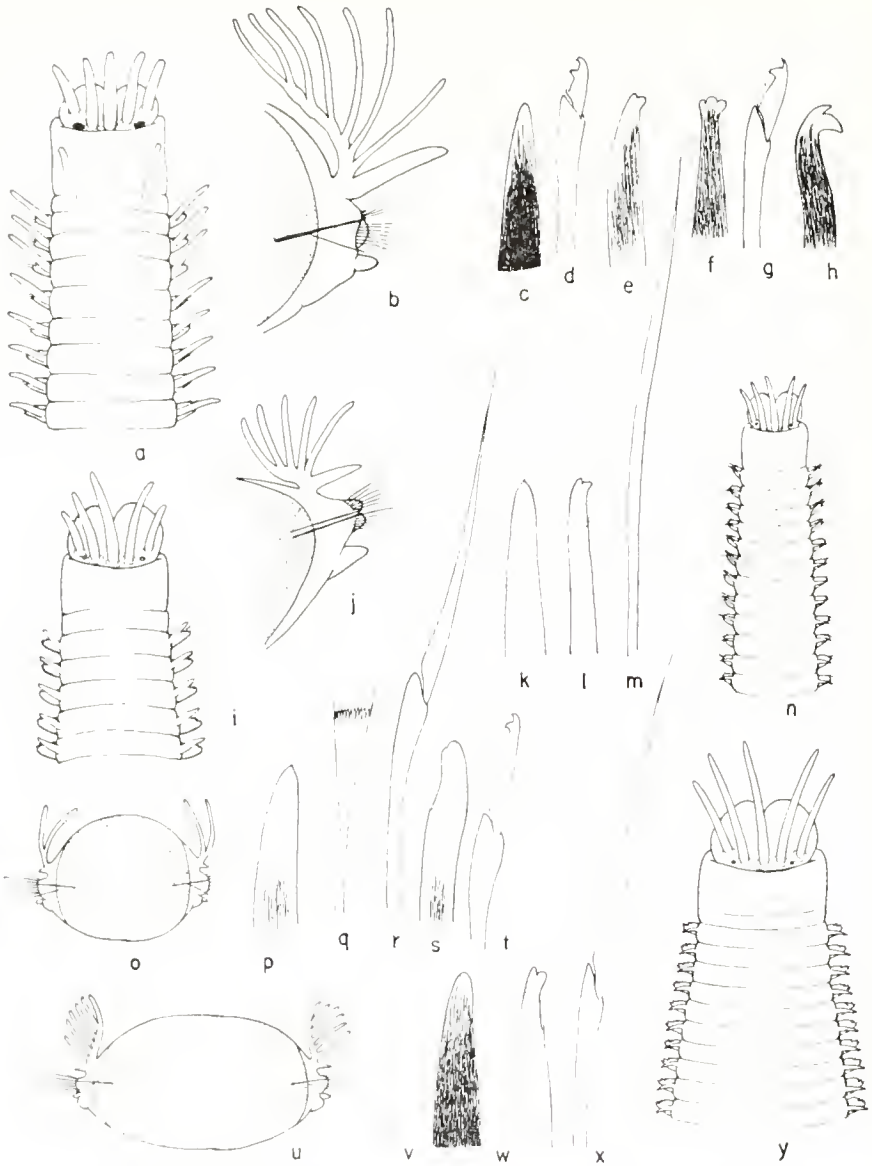

FIG. 17.5. *Eunice afra punctata*. (A) Head. (B) Fiftieth foot. (C) Aciculum. (D) Compound seta. (E) Acicular seta. *Eunice filamentosa* (after Hartman, 1944). (F) Aciculum. (G) Compound seta. (H) Acicular seta. *Marphysa mossambica*. (I) Head. (J) Fiftieth foot. (K) Aciculum. (L) Acicular seta. (M) Inferior simple seta. *Marphysa depressa*. (N) Head. (O) T/S middle segment. (P) Aciculum. (Q) Comb seta. (R) Spinigerous compound seta. (S) Acicular seta. (T) Falcigerous compound seta. *Marphysa sanguinea*. (U) T/S middle segment. (V) Aciculum. (W) Acicular seta. (X) Compound seta. (Y) Head.

4 Dorsal cirri bifurcate (fig. 17.6.g) . . . . . ***M. bifurcata*** (p. 397)
– Dorsal cirri not bifurcate 5
5 Gills restricted to about 20 segments in the anterior part of body 6
– Gills continue to near end of body 7
6 Gills start from setiger 8–9. Head notched anteriorly (fig. 17.6.k, l) ***M. purcellana*** (p. 397)
– Gills start from setiger 15–20. Head rounded anteriorly (fig. 17.6.p) . ***M. adenensis*** (p. 399)
7 Gills of two or more filaments and first appear in the anterior part of the body . . 8
– Gills as single filaments; they first appear after setiger 55 and are best developed in the posterior part of the body . . . . . ***M. posterobranchia*** (p. 399)
8 Acicular setae unidentate (fig. 17.7.d); gills start between 12th and 24th foot. Body oval in section . . . . . ***M. capensis*** (p. 400)
– Acicular setae bidentate (fig. 17.7.i); gills start on 20th to 40th foot; posterior segments often flattened . . . . . ***M. corallina*** (p. 400)

Marphysa mossambica (Peters, 1854)
(fig. 17.5.i–m)

Eunice mossambica Peters, 1854: 612.
Marphysa mossambica: Crossland, 1903: 139, pl. 15 figs. 7–10; Gravier, 1900: 267, pl. 14 figs. 89–90, text-figs. 137–139.

Body up to 350 mm. in length and flattened after the first few segments. Anterior margin of head (fig. 17.5.i) deeply bilobed. Antennae smooth, 1·5 times prostomial length. Gills (fig. 17.5.j) appear on the 25th–33rd foot according to size, reach a maximum of six to eight filaments and persist to the end of the body. Setae (fig. 17.5.m) are all simple capillaries throughout, all with very narrow striated blades. No comb-setae. Acicula (fig. 17.5.k) shading from yellow to black with straight blunt ends. Acicular setae (fig. 16.5.l) pale, bidentate and only half the thickness of the acicula; they are not present in all feet.

Type locality: Mocambique Island.

Records: Mocambique Island (i).

Distribution: Red Sea (i); tropical Indo-west-Pacific (i).

Marphysa depressa (Schmarda, 1861)
(fig. 17.5.n–t)

Eunice depressa Schmarda, 1861: 127.
Marphysa depressa: Day, 1953: 434, fig. 5 n, p.

Anterior margin of head bilobed (fig. 17.5.n). Antennae smooth and longer than the prostomium. Body slender, rounded in section (fig. 17.5.o) and up to 100 mm. long. Gills start from 10th–25th foot according to size, reach a maximum of two to four filaments and decrease gradually to posterior end. Superior setae include capillaries and asymmetrical comb-setae with numerous teeth (fig. 17.5.q); inferior setae are compound with both spinigers (fig. 17.5.r) and long bladed bidentate falcigers (fig. 17.5.t), the latter being more common anteriorly. Acicula (fig. 17.5.p)

three anteriorly, but reduced to two posteriorly, with pale tips and dark brown to black shafts. Acicular setae pale distally and bluntly bidentate, with small guards (fig. 17.5.s).

TYPE LOCALITY: Auckland, New Zealand.

RECORDS: Cape (33/18/i, s and 33/26/e); Natal (29/31/i).

DISTRIBUTION: New Zealand (i).

Marphysa sanguinea (Montagu, 1815)
(fig. 17.5. u–y)

Nereis sanguinea Montagu, 1815: 20.
Marphysa sanguinea: Fauvel, 1923: 408, fig. 161 a–h.

Body stout, oval in section (fig. 17.5.u), up to 250 mm. long. Anterior margin of head bilobed. Antennae (fig. 17.5.y) smooth, almost twice the length of the prostomium. Dorsal cirri as long as the setigerous lobes. Gills start from the 16th–30th foot, reach a maximum of four to seven filaments and decrease towards the end of the body. Superior setae include the usual winged capillaries and numerous comb-setae with coarse teeth; inferior setae are compound and spinigerous (fig.17. 5.x). Two to three black acicula with blunt tips (fig. 17.5.v). Acicular setae (fig. 17.5.w) relatively slender and inconspicuous, being pale and bidentate with small guards in the adult and with large guards in juveniles.

TYPE LOCALITY: Coast of Devon, England.

RECORDS: South West Africa (26 15/i); Cape (33/18/i, s and 31/23/e to 33/26/i) – common in muddy sandbanks and Zostera beds.

DISTRIBUTION: N. Atlantic (Scotland (s), English Channel (e, i) to Senegal (i, s) and North Carolina (i) to the Gulf of Mexico (i)); Mediterranean; New Zealand; southern California (i, s); Japan (i).

Marphysa macintoshi Crossland, 1903
(fig.17.6.a–e)

Marphysa macintoshi Crossland, 1903: 137, pl. 14 figs. 3–6, text-fig. 12; Day, 1962: 643 (with synonymy).

Body over 200 mm. long, slender, rounded or somewhat flattened. Palps partially fused and the anterior margin of the head is not obviously bilobed. Antennae (fig. 17.6.a) smooth, about as long as the prostomium. Maxillary formula: Mx. I = 1 – 1; Mx. II = 7 + 7; Mx. III = 7 + 0; Mx. IV = 3 + 8; Mx. V are chitinised areas without teeth. Eyes not defined. Mandibles normal. Gills appear on the 20th–50th foot according to size, reach a maximum of six filaments (fig. 17.6.c) and gradually decrease towards the end of the body. Acicula (fig. 17.6.b) bluntly pointed and brown with pale tips; they decrease from three anteriorly to one in the middle of the body. A single brown acicular seta (fig. 17.6.c) with a simple

blunt tip. Superior setae are winged capillaries and comb-setae; inferior setae are compound with knife-shaped blades (fig. 17.6.d), though they are often retracted so deeply that only the blades protrude simulating simple setae.

TYPE LOCALITY: Zanzibar.

RECORDS: Cape (34/24/i) to Natal (29/31/i) and Mocambique (26/32/e, i and 23/35/e); Madagascar (i).

DISTRIBUTION: Red Sea (i, s) and tropical Indian Ocean (i, s, d).

Marphysa bifurcata Kott, 1951
(fig. 17.6.f–j)

Marphysa bifurcata Kott, 1951: 121; Day, 1957: 90, fig. 6 a–e.

Body about 80 mm. long. Palps fused completely so that the anterior margin of the head is rounded (fig. 17.6.f). Antennae short, smooth and half the length of the prostomium. Gills from setiger 22 and extend to the end of the body and reach a maximum of four to five filaments which arise directly from the dorsum and not from an axial filament (fig. 17.6.g). Dorsal cirri short and conical anteriorly but become bifurcate in the branchial region. Superior setae are winged capillaries and comb-setae. Three brown acicula with pale blunt tips (fig. 17.6.h) anteriorly reduced to one over the rest of the body; inferior setae falcigerous and bidentate with divergent teeth and rounded guards (fig. 17.6.j). Acicular setae (fig. 17.6.i) brown shading to yellow near the tips which are minutely bidentate and lack guards.

TYPE LOCALITY: Port Derran, S.W. Australia.

RECORDS: Mocambique (23/35/s).

DISTRIBUTION: S.W. Australia.

Marphysa purcellana Willey, 1904
(fig. 17.6.k–o)

Marphysa purcellana Willey, 1904: 263, pl. 13 fig. 17; Day, 1953: 435.

Body (fig. 17.6.k) about 60 mm. long and oval in section with a brown bar on the prostomium and reddish brown pattern anteriorly. Anterior margin of head bilobed (fig. 17.6.l). Maxillary formula: Mx. I = 1 + 1; Mx. II = 5 + 5; Mx. III = 5 + 0; Mx. IV = 3 + 8. Antennae short, smooth and as long as the prostomium. Gills start on the eighth foot as four filaments, reach a maximum of 18 filaments on the 18th foot and then decrease to end on the 28th foot. Dorsal cirri as long as the setigerous lobe in the prebranchial region, increase to the same length as the branchial filaments in the branchial region and remain much longer than the setigerous lobe in the post-branchial region. Acicular setae (fig. 17.6.n) yellow, and strongly

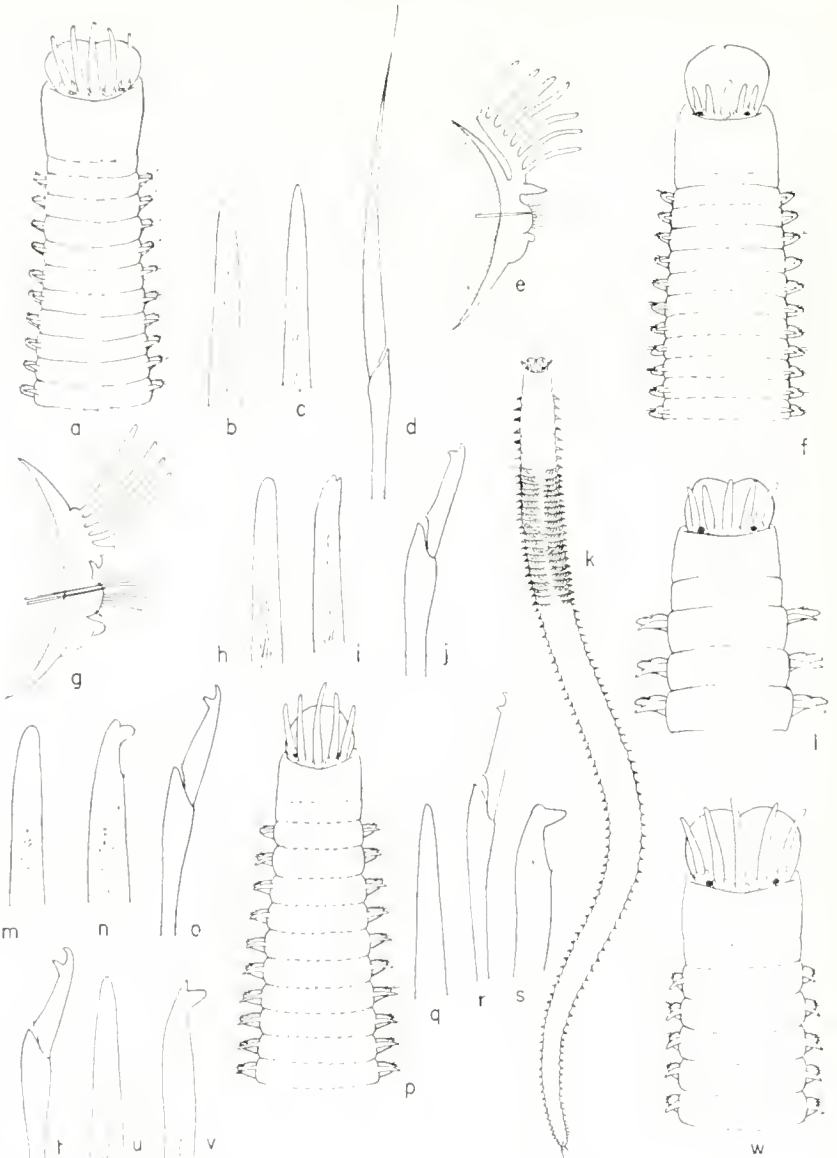

FIG. 17.6. *Marphysa macintoshi*. (A) Head. (B) Aciculum. (C) Acicular seta. (D) Compound seta. (E) Fiftieth foot. *Marphysa bifurcata*. (F) Head. (G) Fortieth foot. (H) Aciculum. (I) Acicular seta. (J) Compound seta. *Marphysa purcellana*. (K) Entire worm twice life size. (L) Head. (M) Aciculum. (N) Acicular seta. (O) Compound seta. *Marphysa adenensis*. (P) Head. (Q) Aciculum. (R) Compound seta. (S) Acicular seta. *Marphysa posterobranchia*. (T) Compound seta. (U) Aciculum. (V) Acicular seta. (W) Head.

bidentate with small guards. Acicula (fig. 17.6.m) blunt and yellow. Ventral setae (fig. 17.6.o) compound and falcigerous with two rather large teeth.

Type locality: Table Bay, South Africa.

Records: South West Africa (27/15/s, 28/16/s); Cape (33/18/s to 33/26/s).

Distribution: Endemic.

Marphysa adenensis Gravier, 1900
(fig. 17.6.p–s)

Marphysa adenensis Gravier, 1900: 270, pl. 14 figs. 91–92; text-figs. 140–143.

Body slender, rounded in section and up to 70 mm. long for 200 segments. No colour markings. Head (fig. 17.6.p) smoothly rounded anteriorly. Antennae tapered, not ringed, the median slightly longer than the prostomium. Jaws weakly chitinised. Mx. I = 1 + 1; Mx. II = 7 + 8; Mx. III = 7 + 0; Mx. IV = 7 + 11; Mx. V = chitinous plates without teeth. Gills appear suddenly about the 15th–19th foot and end abruptly 20 segments later. Each gill is large and pectinate with 8–10 long filaments arising from the shorter dorsal cirrus. Acicula (fig. 17.6.q) blunt, always pale, three anteriorly but only one over most of the body. One acicular seta from setiger 35–40 onwards, always pale and bidentate with a small terminal tooth and guards (fig. 17.6.s). Superior setae include narrow-winged capillaries and comb-setae with 5–10 teeth. Inferior setae (fig. 17.6.r) are compound and falcigerous with long narrow bidentate blades.

Type locality: Aden.

Records: Madagascar (i).

Distribution: Red Sea (i).

Marphysa posterobranchia Day, 1962
(fig. 17.6.t–w)

Marphysa posterobranchia Day, 1962: 645, fig. 4 a–e.

Body only about 30 mm. long, slender and rounded in section. Anterior margin of head bilobed. Antennae (fig. 17.6.w) smooth or wrinkled and just exceed the length of the prostomium. Maxillae pale, formula: Mx. I = 1 + 1; Mx, II = 4 + 4; Mx. III = 6 + 0; Mx. IV = 5 + 10. Gills as simple filaments restricted to the posterior segments. They do not appear before setiger 55 in juveniles and in adults are best developed on the last few segments. Dorsal cirri well developed anteriorly but smaller than the gills posteriorly. Acicula and acicular setae pale in juveniles, black in adults and appear about the 30th foot. Acicula (fig. 17.6.u) with blunt ends. Acicular setae (fig. 17.6.r) bidentate, with guards. Superior setae are winged capillaries and comb-setae with 8–15 teeth; inferior setae compound and falcigerous with two strong teeth (fig. 17.6.t).

Type locality: St. Michaels-on-Sea, Natal.

Records: Cape (33/25/s) to Natal (30/30/i).

Marphysa capensis (Schmarda, 1861)
(fig. 17.7.a–e)

Eunice capensis Schmarda, 1861 : 126.
Marphysa capensis : Willey, 1904 : 263, pl. 13 fig. 16.

Body up to 150 mm. long and 10 mm. at its widest, roughly oval in section (fig. 17.7.b). Colour brown with a slightly darker peristome. Anterior margin of head bilobed (fig. 17.7.a). Antennae smooth and extending back to the first setiger. Maxillary formula : Mx. I = 1 + 1 ; Mx. II = 3 + 4 ; Mx. III = 4 + 0 ; Mx. IV = 3 + 6 ; Mx. V = 1 + 1. Branchiae start on the 12th–30th foot according to size and extend almost to the end of the body, with a maximum of four filaments. Superior setae include the usual winged capillaries and comb-setae. Inferior setae (fig. 17.7.e) are falcigerous with rounded guards. Aciculum (fig. 17.7.c) black, bluntly pointed. Acicular setae (fig. 17.7.d) black and characteristically unidentate without guards.

Type locality : Cape of Good Hope.

Records : South West Africa (22/14 i and 26/15 i) to W. Cape (33/18 i, s).

Distribution : New Zealand ; Chatham Is. (i) ; subantarctic (i) ; Antarctica.

Marphysa corallina (Kinberg, 1865)
(fig. 17.7.f–j)

Nauphanta corallina Kinberg, 1865 : 564.
Marphysa corallina : Hartman, 1948 : 81, pl. 11 figs. 4–7 ; Day, 1954 : 19.

Anterior margin of head bilobed (fig. 17.7.g). Antennae smooth, about 1·5 times as long as prostomium. Body very long reaching 300 mm., the anterior part rounded, and the posterior part flattened (fig. 17.7.f). Gills start from the 20th–50th foot according to size, reach a maximum of six filaments and continue to the posterior end with a reduced number of filaments. Comb-setae with 20–25 teeth. Inferior setae (fig. 17.7.j) compound and falcigerous. Acicula (fig. 17.7.h) dark with pale blunt tips ; acicular setae (fig. 17.7.i) pale and characteristically bidentate with small guards.

Type locality : Oahu Island, Honolulu.

Records : Eastern Cape (32 28 i) to Natal (29 31 i and 28 32 i) ; Mocambique (26 32 i) ; and Madagascar (i).

Distribution : Tropical Indo-west-Pacific (i, s).

LYSIDICE Savigny, 1818

Two cushion-shaped palps which are partly fused so that the anterior margin of the head is bilobed. Two eyes. Three antennae. Maxillae with four to five pairs of toothed plates. Mandibles well developed. No tentacular cirri on the second

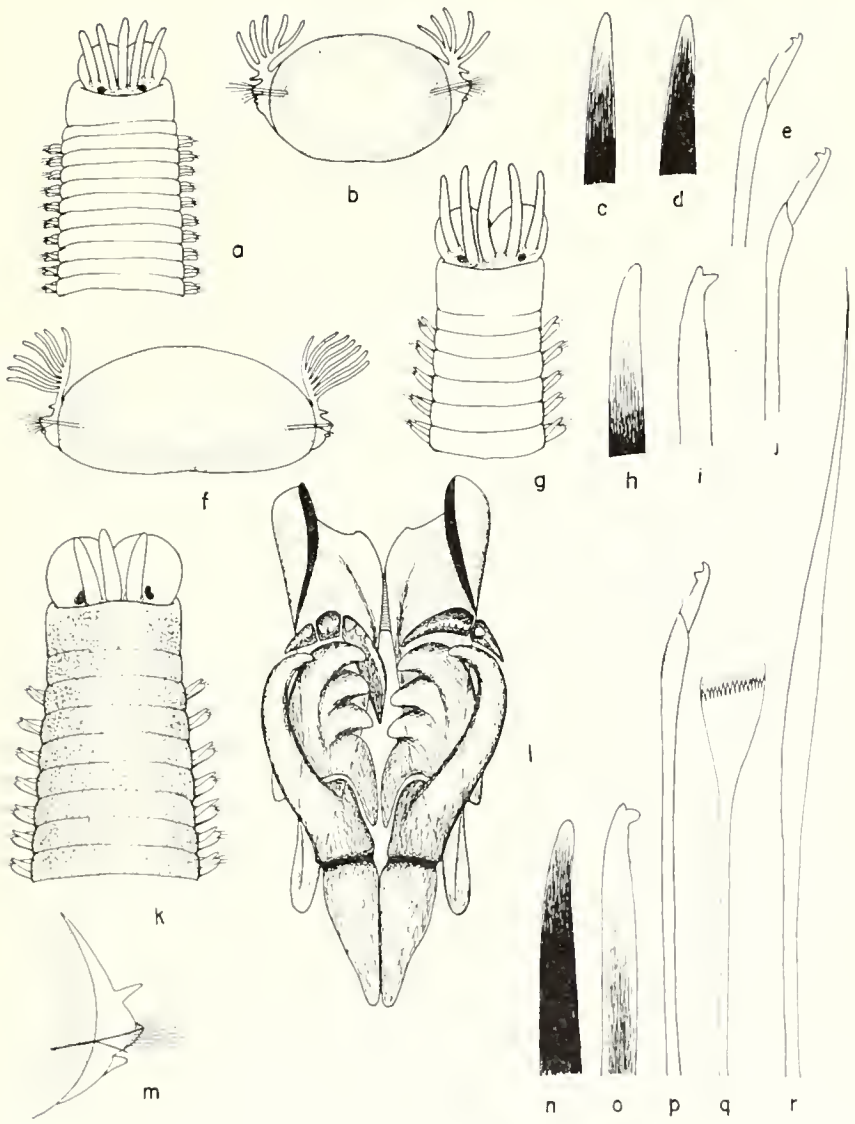

FIG. 17.7. *Marphysa capensis*. (A) Head. (B) T/S segment 100. (C) Aciculum. (D) Acicular seta. (E) Compound seta. *Marphysa corallina*. (F) T/S segment 100. (G) Head. (H) Aciculum. (I) Acicular seta. (J) Compound seta. *Lysidice natalensis*. (K) Head. (L) Jaws (maxillae above, mandibles below). (M) Fiftieth foot. (N) Aciculum. (O) Acicular seta. (P) Compound seta. (Q) Comb seta. (R) Limbate capillary.

apodous segment. No branchiae. Setae include simple capillaries, comb-setae, compound falcigers and acicular setae.

Type species: *Lysidice ninetta* Audouin & Milne Edwards, 1833.

Key to Species

1	Second dental plate with 4 teeth	2
–	Second dental plate with three heavy teeth (fig. 17.7.l)	***L. natalensis***
2	Eyes reniform	***L. collaris***
–	Eyes oval	***L. ninetta***

Lysidice natalensis Kinberg, 1865
(fig. 17.7.k–r)

Lysidice natalensis Kinberg, 1865: 566.
Lysidice capensis Grube, 1868: 12; McIntosh, 1904: 40, pl. 3 fig. 13.

Body up to 100 mm. long by 5 mm.; colour brown with minute white spots. Anterior margin of head white and bilobed (fig. 17.7.k). A pair of reniform black eyes just external to the lateral antennae. Antennae white, slightly tapered, as long as the prostomium. Mandibles (fig. 17.7.l) heavy, gouge-shaped, and calcified along the cutting margin. Maxillary formula: Mx. I = 1 + 1; Mx. II = 3 + 3; Mx. III = (2–3) + 0; Mx. IV = 2 + (4–8); Mx. V = 1 + 1. The three teeth on Mx. II are characteristically heavy. Parapodia (fig. 17.7.m) each with a conical dorsal cirrus, a truncate setigerous lobe and a ventral cirrus which is at first rounded but later indistinguishable from the glandular ventral pad. Superior setae are limbate capillaries (fig. 17.7.r) and comb-setae (fig. 17.7.q). Inferior setae (fig. 17.7.p) are compound with short falcigerous blades. Acicula (fig. 17.7.n) black with blunt tips; acicular setae start about the 20th foot and are brown and bidentate with small guards (fig. 17.7.o).

Type locality: Durban.

Records: South-west Africa (26/15/i); Cape (31/17/i, 34/18/i, s, 34/23/e); Natal (30/30/i to 28/32/i).

Distribution: Endemic.

Lysidice collaris Grube, 1870
(fig. 17.8.a–f)

Lysidice collaris Grube, 1870: 495; Gravier, 1900: 272, pl. 14 figs. 93–95, text-figs. 144–147.

Body up to 75 mm. long. Anterior margin of head (fig. 17.8.a) bilobed. Antennae tapered, slightly longer than prostomium. Eyes reniform. Mandibles gouge-like, partly calcified. Maxillary formula: Mx. I = 1 + 1; Mx. II = (4–5) + 4; Mx. III = (3–5) + 0; Mx. IV = 2 + 5; Mx. V are chitinised areas. Parapodia (fig. 17.8.c) each with a short conical dorsal cirrus set well above the broad setigerous lobe and a papilliform ventral cirrus which is hardly distinguishable from the glandular pad after the 30th foot. Superior setae are limbate capillaries and comb-setae;

inferior ones are bidentate falcigers (fig. 17.8.d). Acicula (fig. 17.8.e) with brown shafts and blunt ends; acicular setae (fig. 17.8.f) start about the 20th foot and are brown with blunt, minutely bilobed tips.

TYPE LOCALITY: Red Sea.

RECORDS: Cape (34/23/e); Natal (28/32/i); Mocambique (26/32/i); Madagascar (i, s).

DISTRIBUTION: Red Sea (i, s) and tropical Indo-west-Pacific (i, s) to Japan.

Lysidice ninetta Audouin & Milne Edwards, 1833
(fig. 17.8.g–i)

Lysidice Ninetta Audouin and Milne-Edwards, 1833: 235; Fauvel, 1923: 411, fig. 162 a–f.

Body up to 150 mm. long, reddish with white punctuations and white bars on setigers 2 and 5. Anterior margin of head bilobed (fig. 17.8.g). Antennae subequal and shorter than prostomium; eyes large, black, and characteristically oval. Mandibles heavy and gouge-like. Mx. I = 1 + 1; Mx. II = 4 + 4; Mx. III = 4 + 0; Mx. IV = 4 + 4; Mx. V are chitinised patches. Dorsal cirri are digitiform and as long as the setigerous lobes which are compressed truncate cones; ventral cirri papilliform with swollen bases. Acicula dark; acicular setae bidentate with guards, and appear about the 20th foot. Superior setae are limbate capillaries and comb-setae. Inferior setae are compound, falcigerous and have bidentate blades.

TYPE LOCALITY: Isles of Chansey, France.

RECORDS: ? South West Africa (22/14/i, 26/15/i).

DISTRIBUTION: North Atlantic (English Channel (i, s) and North Carolina (i); Angola (i); Mediterranean; ? Indian Ocean.

NEMATONEREIS Schmarda, 1861

Palps completely fused and head rounded in front. Two to four eyes. A single antenna. Maxillae with four pairs of toothed plates. Mandibles well developed. No tentacular cirri on the second apodous segment. No branchiae. Setae include simple capillaries, comb-setae, falcigerous compound setae and acicular setae.

TYPE SPECIES: *Lumbriconereis unicornis* Grube, 1840.

Nematonereis unicornis (Grube, 1840)
(fig. 17.8.j–n)

Lumbriconereis unicornis Grube, 1840: 80.
Nematonereis unicornis: Fauvel, 1923: 412, fig. 162 h–n.

Body slender, 150–200 mm. long, reddish anteriorly. Head (fig. 17.8.j) ovoid, with a single tapered antenna slightly shorter than the prostomium and a pair of large, rounded, black eyes posteriorly. Mandibles gouge-shaped. Mx. I are falcate

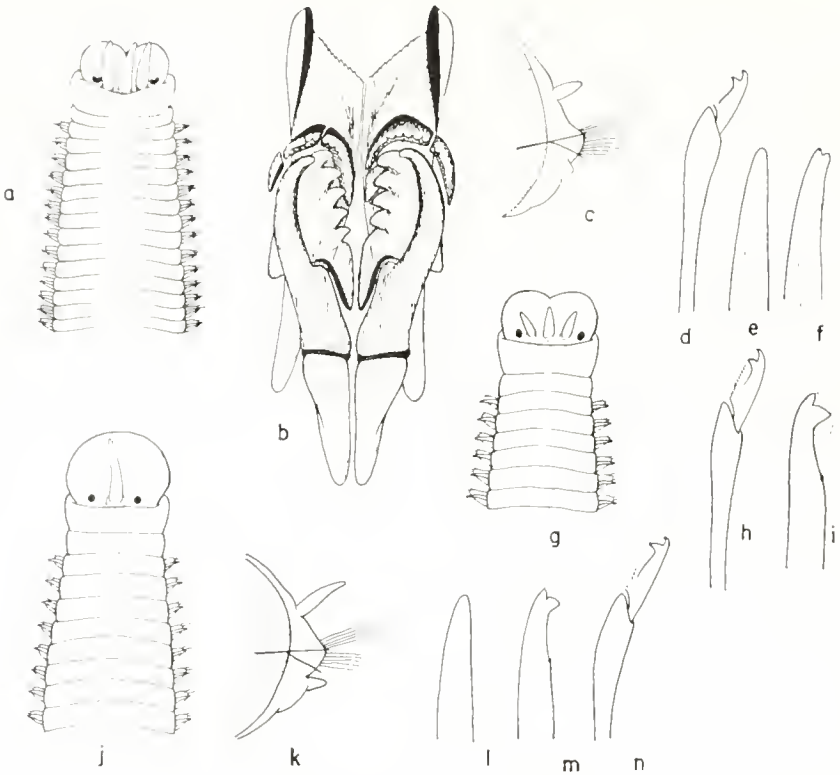

FIG. 17.8. *Lysidice collaris*. (A) Head. (B) Jaws. (C) Fifieth foot. (D) Compound seta. (E) Aciculum. (F) Acicular seta. *Lysidice ninetta* (after Fauvel). (G) Head. (H) Compound seta. (I) Acicular seta. *Nematonereis unicornis*. (J) Head. (K) Fortieth foot. (L) Aciculum. (M) Acicular seta. (N) Compound seta.

and Mx. V are mere chitinised patches, the dental formula being: Mx. I = 1 + 1; Mx. II = 4 + 5; Mx. III = 4 + 0; Mx. IV = 4 + 6. The dorsal cirri (fig. 17.8.k) are rather longer than the setigerous lobes which are compressed, truncate cones. Ventral cirri papilliform with swollen bases. Acicula (fig. 17.8.l) dark in the adult and pale in juveniles. Acicular setae (fig. 17.8.m) appear about the 20th foot and are dark in the adult and boldly bidentate. Superior setae include winged capillaries and broad comb-setae. Inferior setae are bidentate falcigers (fig. 17.8.n) with the secondary tooth larger than the apical one.

TYPE LOCALITY: Adriatic and Mediterranean.

RECORDS: Natal (30/30 i, s); Madagascar (e).

DISTRIBUTION: North Atlantic (English Channel (i, s) to Morocco (d)); Mediterranean; Suez Canal; tropical Indo-west-Pacific (i).

Subfamily **ONUPHINAE** Kinberg, 1865

Prostomium with two globular palps, two short frontal antennae and five longer occipital antennae mounted on ringed ceratophores. Mandibles well formed. Maxillae consist of four to five pairs of toothed plates with Mx. III and IV fused on the right side; maxillary supports short and broad without an unpaired median piece. Only the buccal segment apodous. Tentacular cirri present or absent. Anterior parapodia often directed forwards and have tapered ventral cirri. Later parapodia smaller with cushion-like ventral cirri. Tapered dorsal cirri on all setigerous segments. Branchiae often present and may have simple, pectinately branched or spirally arranged filaments. Setae include winged capillaries and pseudocompound forms in the first few feet and winged capilaries, comb-setae and acicular setae in later feet. Animals tubicolous.

Records from southern Africa

Diopatra cuprea (Bosc)	15AiCs, ?16As
as *Dipatra neapolitana* (non Delle Chiaje)	?33As, ?34As
Diopatra cuprea punctifera Ehlers	50Cs
as *Diopatra neapolitana* (non Delle Chiaje)	32Cs
as *Diopatra punctifera* Ehlers	15Cs
Diopatra dubia Day	50Cs, 56Cs
Diopatra monroi Day	50Csd
as *Diopatra cuprea* (non Bosc)	26Wis
as *Diopatra punctifera* (non Ehlers)	33Cs, 37Cs
? as *Diopatra* near *dentata*	32Cd
as *Diopatra* near *viridis*	32Cs
Diopatra musseraensis Augener	26Ai
Diopatra neapolitana Delle Chiaje	31Ai, 37As, ?39Ai, 45Ni
Diopatra neapolitana capensis Day	50Cs, —Ns
Epidiopatra gilchristi Day	50Cs
Epidiopatra hupferiana Augener	34Wi
Epidiopatra hupferiana monroi Day	45Pi, 50Cs, —Ps
as *Epidiopatra hupferiana* (non Augener)	33Cs
Epidiopatra papillosa Day n.sp	—Ns
Hyalinoecia tubicola (Müller)	32Cd, 50Cs
as *Onuphis tubicola* (Müller)	15Csd
Hyalinoecia sp.	55Ca
Leptoecia antarctica Monro	50Cs
Onuphis (*Northria*) *conchylega* Sars	45Ps, 50Cs, — Ns
Onuphis (*Nothria*) *geophiliformis* Moore	50Cs
Onuphis (*Nothria*) *holobranchiata* Marenzeller	50Cs
as *Diopatra holobranchiata* (Marenzeller)	15Cs
Onuphis eremita Audouin & Milne Edwards	27Mi, 28Mi, 33Cs, 50Cs
Onuphis landanaesis Augener	26Ai
Onuphis quadricuspis Sars	? 32Cs

Onuphis quinquedens Day	40Ni, 56Cl
Rhamphobrachium chuni Ehlers . . .	— Nd
Rhamphobrachium capense Day . . .	50Cs

BIOLOGICAL NOTES

The onuphids are tubicolous scavengers. They construct many different sorts of tubes and probably eat an equally wide variety of foods.

Onuphis quinquedens is a good example to start with though the better known *O. eremita* probably has similar habits. *O. quinquedens* lives in sand near the low tide mark where there is permanent seepage from higher levels. It makes vertical burrows and strengthens the walls with a mucoid secretion. The entrance to the burrow is not visible but every now and again the tentacles are protruded and if a dead shrimp is thrown close enough it is dragged down. It is not clear whether this is done by the stout tentacles or whether these are only sensory and the jaws are used. When alarmed the worm retracts with great rapidity and it is only by jabbing a sharp knife suddenly into the sand that the anterior end can be obtained. When the head is lost the rest of the worm may be dug out more leisurely.

Diopatra cuprea makes more elaborate tubes. The walls are tougher than those of *O. quinquedens* and the last three or four centimetres project above the surface and are decorated with shells, leaves, bits of paper or any flat object but always set edgeways into the tube. The mouth of the tube curls over, possibly as a protection against wading birds. Judged by laboratory observations, *Diopatra cuprea* feeds mainly at night and a dead amphipod 5 cms. away was taken so the worm must scavenge a fair distance around the base of its tube.

Diopatra monroi lives on the muddy fishing banks about 100 fathoms deep off the west coast of South Africa. It occurs in dense concentrations of more than 500 per square metre and the glutinous muddy tubes may fill the whole cod-end of an otter trawl. It is inconceivable that such a dense concentration of carnivorous worms could subsist solely on other members of the benthos. They must be dependent on planktonic organisms either alive or drifting dead near the bottom.

Epidiopatra gilchristi seems to be adapted for life on rocky bottoms as it makes tough translucent tubes which are attached to stones. The tentacles are very long and may be used to catch planktonic forms for no trace of sand or bottom sediment has been found either in the gut or in the tube.

Onuphis conchylega makes a curious flattened tube out of large shell fragments. The first pair of feet are large, directed forward and provided with stout claw-like setae. With these, the worm is said to crawl about dragging its tube much in the same way as a caddis larva. *Hyalinoecia tubicola* which lives on the continental slope has similar crawling habits. In this case, however, the tube is translucent and looks like the quill of an enormous feather for it may be 250 mm. long. When alarmed the worm retracts into the middle of the tube and both ends are closed by a series of pocket-like valves.

THE MAIN DIAGNOSTIC CHARACTERS

Jaws. The number of teeth on the maxillary plates is usually too variable to be of systematic value but in one case at least (*Diopatra monroi*) the development of the mandibular shafts is characteristic.

Head appendages. These soft structures are so contractile that only major differences are significant. The number of rings on the ceratophores of the occipital antennae are useful within limits, e.g. 3–4, 6–10, 12–20. Occasionally too, the rings develop blunt lateral lobes which gives the ceratophore a characteristic branched effect. The presence or absence of tentacular cirri in the adult is of generic importance but it has been shown that these structures may develop fairly late so that small juveniles may be difficult.

Branchiae. The branchiae arise as outgrowths of the dorsal cirri and the arrangement of the filaments, whether single, in pectinate series or spirally arranged around a central axis is of generic importance. Among adults the position where the first branchia appears is constant within one or two segments.

Setae. The most important setae are the pseudocompound hooks which are found on the first few feet. The joint between the shaft and the apex is seldom complete; usually there is merely a notch on one side of the shaft and even this may be poorly defined and in rare cases, absent. The apex may be unidentate to quadridentate and is often protected by a projecting sheath. In *Rhamphobranchium* these hooks are very long and the shaft is usually thorny. The winged capillaries are very variable but the comb-setae which appear later are of value within limits. Thus the number of teeth within a single species may vary from 5–10, 12–18, 15–25.

Pattern. Colour itself is no guide for it varies in intensity with the habitat of the worm, but the pattern has been found very useful in species of *Diopatra* and if the material is preserved in the dark it persists for many years.

Tubes. The nature of the tube depends in many cases on the nature of the material available to the worm. But this is not always true. Some species construct tough translucent tubes, others fragile tubes of debris, others tough muddy tubes and some species of *Diopatra* decorate the free end of the tube with shell fragments or leaves which are always set edgeways on.

Key to Genera

1 Tentacular cirri absent (fig. 17.9.b) 2
– Tentacular cirri present in the adult 3
2 Branchial filaments arranged spirally (fig. 17.9.i) . . . ***EPIDIOPATRA*** (p. 408)
– Branchiae as simple filaments (fig. 17.9.o) . . . . ***HYALINOECIA*** (p. 411)
– Branchiae absent (fig. 17.10.d) . . . . . ***PARONUPHIS*** (p. 412)
3 Branchial filaments arranged spirally . . . . . ***DIOPATRA*** (p. 412)
– Branchiae as simple or pectinate filaments 4
4 The first three feet directed forwards and bear long hooked setae often with spiney shafts. Occipital antennae short (fig. 17.12.g) . . . . ***RHAMPHOBRACHIUM*** (p. 418)
– Anterior feet only slightly modified. Pseudocompound hooks with smooth shafts. Occipital antennae long . . . . . ***ONUPHIS*** (p. 421)

EPIDIOPATRA Augener, 1918

No tentacular cirri. The first four to five feet have digitiform ventral cirri and bear hooded pseudocompound hooks as well as a few capillaries. Branchiae start on the fifth foot and are poorly developed with a few filaments arranged in a spiral around a central axis. Parapodia of middle segments bear simple winged capillaries, comb-setae and an acicular seta.

Type species: *Epidiopatra hupferiana* Augener, 1918.

Key to Species

1 Ceratostyles of occipital antennae papillose (fig. 17.11.b) . . . . . ***E. papillosa***
– Ceratostyles of occipital antennae smooth 2
2 Tube tough and translucent (fig. 17.9.a) . . . . . ***E. gilchristi***
– Tube fragile with attached debris 3
3 Gills 15–20 pairs . . . . . ***E. hupferiana hupferiana***
– Gills three to four pairs (fig. 17.9.g) . . . . . ***E. hupferiana monroi***

Epidiopatra papillosa sp. nov.
(fig. 17.11.a–f)

The type material consists of three anterior fragments without tubes and it is presumed that the tube is fragile. The holotype is 7 mm. long for 40 segments and probably represents half of the whole worm. There are no colour markings. The head (fig. 17.11.b) has subulate frontal antennae and five long occipital antennae with papillose ceratostyles (fig. 17.11.c) borne on short ceratophores with five to seven rings. The median antenna when folded back reaches setiger 8. The jaws were not examined. The tentacular segment lacks tentacular cirri. The body is rather flattened and the segments are about four times broader than long. The first three pairs of parapodia (fig. 17.11.a) are slightly enlarged, directed obliquely forward and bear cirriform ventral cirri. Later parapodia are short, directed laterally and bear cushion-like ventral cirri. The postsetal lobe is poorly developed after the first three to four feet and the presetal lobe is always inconspicuous. Setiger 5 is the only segment with gills and these are not well developed. In the smaller paratypes there is merely a digitiform projection but in the larger holotype the gill axis has four spirally arranged filaments. The first foot has three to four bidentate pseudocompound setae with short hoods (fig. 17.11.e). Winged capillaries with strong serrations at the base of the blade appear in setiger 2; fine comb setae with about eight teeth and bidentate acicular setae (fig. 17.11.d) appear in setiger 8.

Type locality: Ten miles south of Durban in 70 metres (30°30′S).

Type material deposited in the British Museum (Natural History). Register No. 1966.26.3-5.

Records: Natal (29°31′S); Mocambique (21°35′S);.

Epidiopatra gilchristi Day, 1960
(fig. 17.9.a–f)

Epidiopatra gilchristi Day, 1960: 352, fig. 11 a–f.

Body slender, up to 60 mm. long, and encased in an erect, tough, translucent tube (fig. 17.9.a) sometimes annulated and spirally twisted but always attached. Head (fig. 17.9.b) with subulate frontal antennae and five smooth occipital antennae of normal length borne on ceratophores with five to seven rings. Stumpy projections sometimes present on the ceratophores of the inner laterals. Jaws pale and weakly chitinised. Maxillary formula: Mx. I = 1 + 1; Mx. II = 8 + 7; Mx. III = 7 + 0; Mx. IV = 6 + 10. Two to five pairs of poorly developed branchiae (fig. 17.9.d) on setigers 4–9. Setigers 1–3 (fig. 17.9.c) each with a subulate dorsal cirrus, a low presetal lip, a postsetal lobe accompanied by an inferior papilla and finally a subulate ventral cirrus. Later the ventral cirrus becomes a glandular pad and the postsetal lobe is reduced to a papilla. Pseudocompound setae of setigers 1–4 are strongly bidentate with well-marked hoods (fig. 17.9.e). Comb-setae with 12 teeth appear in the sixth foot and two bidentate acicular setae (fig. 17.9.f) a few segments later.

Type locality: Agulhas Bank.

Records: Southern and eastern Cape (35/22/d to 33/28/s); Natal (29/31/s).

Distribution: Endemic.

Epidiopatra hupferiana hupferiana Augener, 1918

Epidiopatra hupferiana Augener, 1918: 355, pl. 5 figs. 104–106, pl. 7 fig. 212, text-fig. 40.

Tube encrusted with debris and coarse sand or mud. Body slender, up to 30 mm. long, brownish anteriorly with a darker spot behind each parapodium joined by a dorsal cross bar to its fellow. Prostomium with distinct eyes, subulate frontal antennae and fairly long occipital antennae whose ceratophores have six to seven rings sometimes with stumpy lateral projections. Each of the first three feet has cirriform dorsal and ventral cirri and a tapered postsetal lobe. Branchiae start on setiger 5 and continue to setiger 20 or 30. The first few are well developed with spirally arranged filaments but later ones decrease and the last few have only one to two filaments. Setae of the first three to four feet include a few capillaries and pseudocompound hooks with bidentate ends and protecting hoods. In later feet the hooks are absent, the capillaries develop broader wings and comb-setae and bidentate acicular setae appear.

Type locality: Senegal.

Records: South West Africa (22/14/s).

Distribution: Senegal (s).

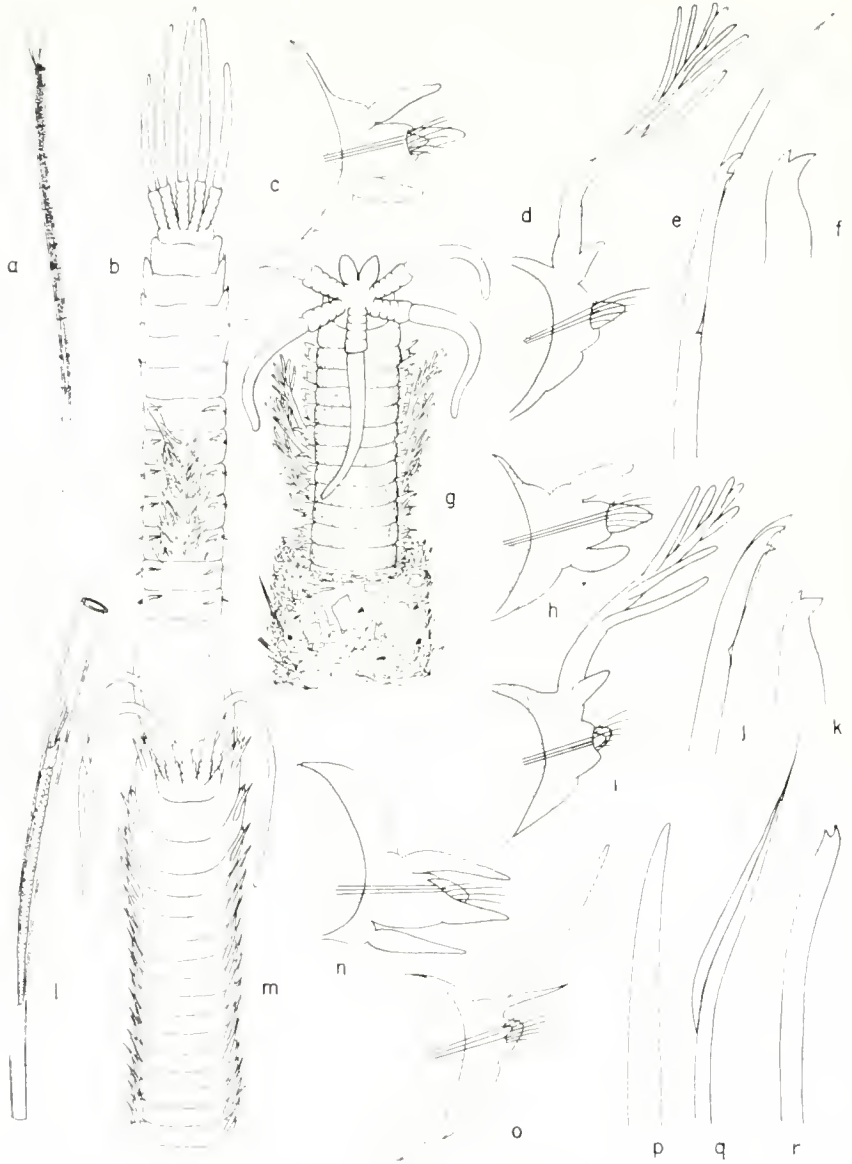

FIG. 17.9. *Epidiopatra gilchristi*. (A) Tube (natural size). (B) Anterior end. (C) Anterior view of first foot. (D) Sixth foot. (E) Pseudocompound seta. (F) Acicular seta. *Epidiopatra hupferiana monroi*. (G) Anterior end and part of tube. (H) Anterior view of second foot. (I) Sixth foot. (J) Pseudocompound seta. (K) Acicular seta. *Hyalinoecia tubicola*. (L) Tube (half natural size). (M) Anterior end. (N) Posterior view of second foot. (O) Fortieth foot. (P) Spine from first foot. (Q) Winged capillary. (R) Acicular seta.

Epidiopatra hupferiana monroi Day, 1957
(fig. 17.9.g–k)

Epidiopatra hupferiana var. *monroi* Day, 1957: 92.

This is generally similar to the stem form but has fewer gills. The tube (fig. 17.9.g) is composed of mud with attached debris. Body up to 35 mm. long. The head has ovoid frontal antennae and five pairs of occipital antennae with five to six ringed ceratophores often with stumpy lateral projections. The first three feet (fig.17. 9.h) are similar to those of the stem form. Branchiae (fig. 17.9.i) appear on setiger 4 or 5 and extend over three to five segments, each smaller than the last. The pseudocompound hooks of the first two to three feet (fig. 17.9.j) are bidentate with short hoods. The acicular setae (fig. 17.9.k) are stout with well developed guards. The coloration is variable; the whole worm may be pale or develop four brown lines separated by pale streaks (fig. 17.9.g).

Type locality: False Bay, South Africa.

Records: Cape (34/18/s, 34/22/s, 34/25/s); Natal (29/32/s); Mocambique (26/32/i, 24/34/s).

Distribution: ? Endemic.

HYALINOECIA Malmgren, 1867

Eyes present or absent. No tentacular cirri. Branchiae present as simple filaments. The first few segments bear simple, pseudocompound or compound setae; succeeding segments have winged capillaries, comb-setae and acicular setae. The tube is horny and translucent or membraneous.

Type species: *Nereis tubicola* Müller, 1776.

Hyalinoecia tubicola (Müller, 1776)
(fig. 17.9.l–r)

Nereis tubicola Muller, 1776: 18.
Hyalinoecia tubicola: Fauvel, 1923: 421, fig. 166 i–q.

Body 60–120 mm. long, quite pale and encased in a transparent quill-like tube (fig. 17.9.l) which is free so that the animal crawls over the bottom. The tube is tapered and provided with internal valves at each end. Head (fig. 17.9.m) with a pair of globular palps, ovoid frontal antennae and occipital antennae with short three to five ringed ceratophores and long ceratostyles. Branchiae (fig. 17.9.o) are all simple filaments starting on setiger 20–30 and continuing to the posterior end; anterior ones are shorter than the dorsal cirri but later they increase in length while the dorsal cirri decrease. Subulate ventral cirri present on the first three to four setigers (fig. 17.9.n) but subsequent ventral cirri are modified to form glandular cushions. Prebranchial feet with a presetal lip which is large in the first 3–4 feet. A cirriform postsetal lobe persists to setiger 15 but thereafter diminishes. Setigers 1 and 2 with stout capillaries and pseudocompound or simple curved hooks without hoods

(fig. 17.9.p). Subsequent setigers with winged capillaries (fig. 17.9.q) and comb-setae. Long-shafted bidentate acicular setae (fig. 17.9.r) appear later.

TYPE LOCALITY: Christiania Fjord, Norway.

RECORDS: Cape (from 30/17/d, 33/17/d and 33/17/vd to 33/26/d); Natal (29 31 s).

DISTRIBUTION: North Atlantic from Greenland (vd, abyssal) and Norway (s, d) to the Gulf of Mexico (d) and South America (d, vd) and Senegal (d); Mediterranean (s, d); Indian Ocean (s, d, vd, abyssal); Japan (?); New Zealand (s).

PARONUPHIS Ehlers, 1887
(Synonym *LEPTOECIA* Chamberlin, 1919)

Tentacular cirri absent. The first one to three feet have digitiform ventral cirri and bear hooded, often pseudocompound hooks. Later feet with ventral cirri reduced to cushions and winged capillary setae, comb-setae and bidentate acicular setae. Branchiae absent.

TYPE SPECIES: *Onuphis (Paronuphis) gracilis* Ehlers, 1887.

Paronuphis antarctica (Monro, 1930)*
(fig.17.10.a–d)

Leptoecia antarctica Monro, 1930: 133, fig. 50; Day, 1960: 356, fig. 11 g–h.

A small species 20–30 mm. long which is pale in alcohol. Eyes present. Frontal antennae ovoid. Occipital antennae (fig. 17.10.a) with five to six rings and fairly long ceratostyles. Tentacular cirri absent. Branchiae entirely absent even on middle segments (fig. 17.10.d). The first three feet project ventro-laterally but later ones are dorsal. The cirriform postsetal lobe persists for the first eight feet and the ventral cirrus is cirriform for the first three feet. Anterior pseudocompound setae (fig. 17.10.b) hooded and usually bidentate with the second tooth much smaller than the terminal one but occasionally unidentate. Bidentate acicular setae (fig. 17.10.c) appear on the ninth foot. Comb-setae with about 14 teeth appear later.

TYPE LOCALITY: 1,080 metres, off South Shetland Islands.

RECORDS: Cape (34/18/s and 34/19/i).

DISTRIBUTION: South Shetlands (abyssal).

DIOPATRA Audouin & Milne Edwards, 1833

Tentacular cirri present in the adult. Branchiae present from about setiger 5 and have a central axis with whorls of filaments. Setae include pseudocompound hooks in the first few feet succeeded by winged capillaries often with serrated blades, comb-setae and bidentate acicular setae.

TYPE SPECIES: *Nereis cuprea* Bose, 1802.

*It is possible that the small specimens reported from South Africa are juveniles of other Onuphids which have not developed tentacular cirri or gills.

Key to Species

1 Pseudocompound setae unidentate or with the secondary tooth very weak (fig. 17.10.i, i[1]) 2
– Pseudocompound setae strongly bidentate (fig. 17.11.q) 3
2 Branchiferous region with a single spot in the middle of the dorsum (fig. 17.10.f). Pseudocompound hooks with hoods . . . . . ***D. neapolitana neapolitana*** (p. 413)
– Peristome brown and branchiferous region with a pattern of five short dark bars across the dorsum (fig. 17.10.l). Pseudocompound hooks usually unidentate and lack hoods ***D. neapolitana capensis*** (p. 413)
3 Frontal antennae flattened and spade-like. Ceratophores of occipital antennae often with lateral projections (fig. 17.11.a) . . . . . ***D. dubia*** (p. 415)
– Frontal antennae subulate. Ceratophores of occipital antennae without lateral projections 4
4 A dark spot behind a median tentacle. Mandibles with thickened, often sausage-like shafts (fig. 17.11.i) . . . . . ***D. monroi*** (p. 415)
– No dark spot behind median tentacle. Mandibles with straight tapered shafts (fig. 17.11.o) 5
5 Blades of comb-setae spirally rolled and have numerous teeth (fig. 17.11.m) ***D. musseraensis*** (p. 417)
– Blades of comb-setae flat or merely slightly curved. 6
6 Comb setae with 16–25 teeth. Colour uniform brown anteriorly without an obvious colour pattern (fig. 17.11.n) . . . . . ***D. cuprea cuprea*** (p. 417)
– Comb setae with 10–15 teetn. A transverse row of four brown spots on the first few segments and later segments with a pale median streak (fig. 17.12.f) ***D. cuprea punctifera*** (p. 418)

Diopatra neapolitana neapolitana Delle Chiaje, 1841
(fig. 17.10.e–k)

Diopatra neapolitana Delle Chiaje, 1841: 97; Day, 1960: 341, fig. 9 a–g.

A large species reaching a length of 300 mm. Tube (fig. 17.10.g) with shell fragments attached edgeways near the anterior end. Frontal antennae subulate. Ceratophore of median antenna with 9–12 rings. Mandibles with straight tapered shafts. A dark spot in the anterior margin of each of the first 10 branchiferous segments (fig. 17.10.f). Gills with fairly long filaments in about 6–10 whorls. Pseudocompound setae of first few feet hooded and either unidentate or with a small secondary tooth (fig. 17.10.i, i[1]). Comb-setae with 5–10 coarse teeth (fig. 17.10.j). Parapodia of the branchiferous region with an asymmetrical presetal lobe having an inferior projection (fig. 17.10.h). Acicular setae (fig. 17.10.h) bidentate.

Type locality: Naples.

Records: South-West Africa (22/14/i); Natal (29/31/i).

Distribution: Mediterranean (other areas doubtful).

Diopatra neapolitana capensis Day, 1960
(fig. 17.10.l–p)

Diopatra neapolitana capensis Day, 1960: 344, fig. 9 h–l.

Tube with shell fragments attached edgeways to the anterior end. Body about 80 mm. long. Frontal antennae subulate. Ceratophore of median occipital antenna with 10–13 rings (fig. 17.10.l). Mandibles with straight, tapered shafts. Dorsal

FIG. 17.10. *Paronuphis antarctica.* (A) Head. (B) Pseudocompound seta. (C) Acicular seta. (D) Middle foot. *Diopatra neapolitana.* (E) Anterior view of second foot. (F) Branchiferous region showing pigment pattern. (G) Tube (half natural size). (H) Seventh foot. (I) Pseudocompound seta. (J) Comb seta. (K) Acicular seta. *Diopatra neapolitana capensis.* (L) Head. (M) Anterior view of second foot. (N) Pseudocompound seta. (O) Acicular seta. (P) Comb seta.

surface of peristome dark brown, the next few segments with five short bars arranged ¯_¯_¯ and most of the branchiferous segments with a pair of brown spots on either side of the mid-dorsal line. Gills with stout trunks and short filaments not longer than twice the width of the branchial axis. Pseudocompound setae (fig. 17.10.n) unidentate or with a minute secondary tooth and a poorly developed hood. Comb-setae (fig. 17.10.p) have 5–12 teeth and appear about setiger 12. Bidentate acicular setae (fig. 17.10.o) start on setiger 18. Early juvenile stages lack tentacular cirri.

Type locality: Algoa Bay, South Africa.

Records: Cape (29/16/s to 31/29/s); Natal (29/31/s).

Distribution: Endemic.

Diopatra dubia Day, 1960
(fig. 17.11.g–j)

Diopatra dubia Day, 1960: 348, fig. 10 g–k.

A small species about 35 mm. long with a fragile mud tube beset with large projecting shell fragments. Pigmentation variable but anterior segments are often brown in contrast to the white ventral cirri and a mid-ventral streak. The frontal antennae (fig. 17.11.g, h) are mere flattened expansions of the prostomium. Occipital antennae have short ringed ceratophores with lateral lobes projecting from the five rings. Jaws poorly developed. Mandibles with straight, tapered shafts. Gills (fig. 17.11.j) appear on the fifth foot but are never well developed; they have only two to three whorls of filaments and disappear about the 30th foot. Anterior pseudocompound setae (fig. 17.11.i) are hooded and strongly bidentate. Winged capillaries with normal serrated blades. Bidentate acicular setae appear on the 10th foot and comb-setae with 18–20 teeth are present on the 15th. Juveniles lack tentacular cirri up to a fairly late stage.

Type locality: False Bay, South Africa.

Records: Cape (from 32/16/d to 34/18/s and 33/27/s).

Distribution: Endemic.

Diopatra monroi Day, 1960
(fig. 17.11.k–p)

Diopatra monroi Day, 1960: 345, fig. 10 a–f.

Tube sausage-like and composed of hardened mud without shell fragments. Body 100–150 mm. long. General colour brown anteriorly with a darker spot just behind the median occipital antenna and dark bars across the anterior branchiferous segments (fig. 17.11.k). Frontal antennae subulate. Ceratophore of median occipital antenna with six to eight rings. Mandibles (fig. 17.11.l) with dark, thickened, often sausage-shaped shafts in the adults. Gills from the fifth foot and have fairly long

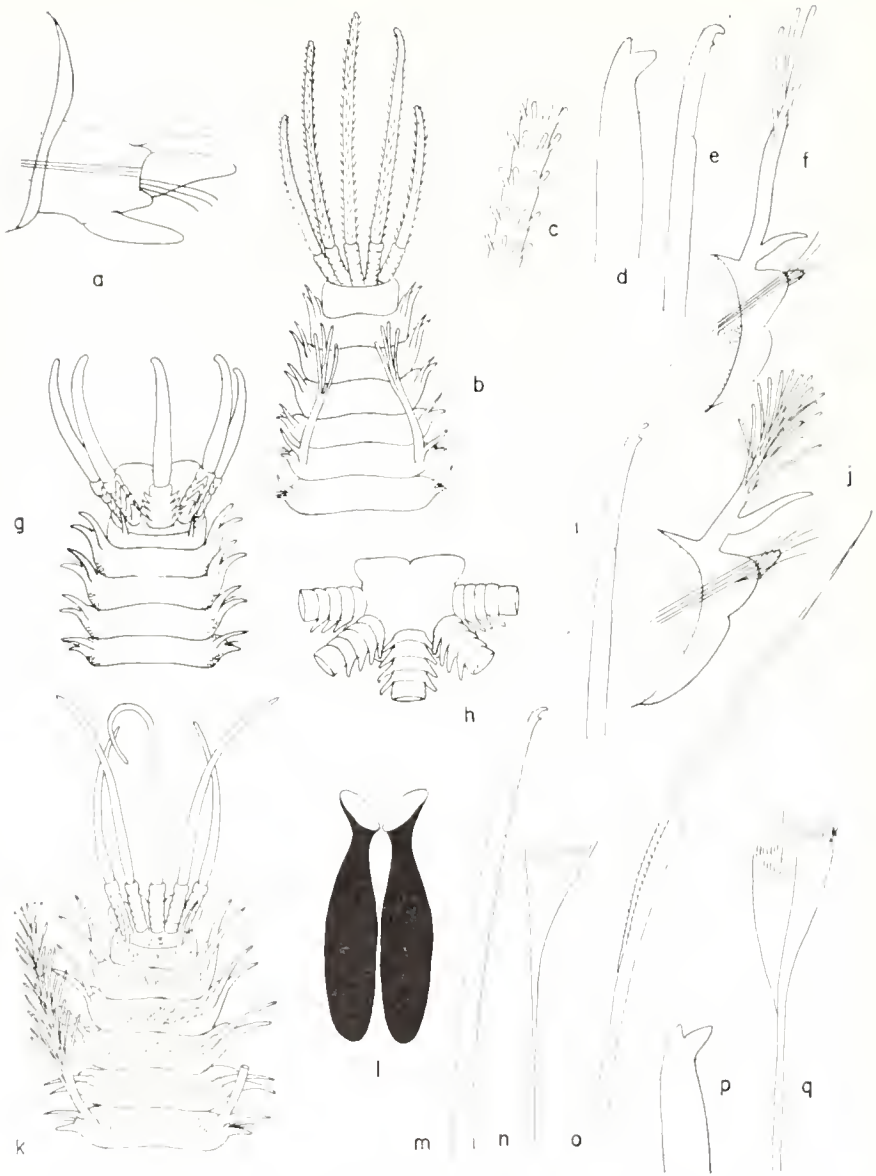

FIG. 17.11. *Epidiopatra papillosa*. (A) First foot (anterior view). (B) Anterior end. (C) Part of occipital tentacle. (D) Acicular seta. (E) Pseudocompound seta. (I) Fifth (branchiferous) foot. *Diopatra dubia*. (G) Anterior end. (H) Dorsal view of prostomium showing frontal tentacles and ceratophores of occipital tentacles (ceratostyles omitted). (I) Pseudocompound seta. (J) Twelfth foot. *Diopatra monroi*. (K) Anterior end. (L) Mandibles. (M) Pseudocompound seta. (N) Comb seta. (O) Winged capillary. (P) Acicular seta. *Diopatra musseraensis*. (Q) Comb seta.

filaments. Pseudocompound setae (fig. 17.11.m) hooded and strongly bidentate. Comb-setae (fig. 17.11.n) appear on the sixth to eighth foot and have 15–25 teeth. Bidentate acicular setae (fig. 17.11.p) appear about the 16th foot.

Type locality: 108 metres, off Lamberts Bay, South Africa.

Records: South West Africa (26/15/i, s, d); western Cape (32/17/s, d to 34/18/s).

Distribution: Endemic.

Diopatra musseraensis Augener, 1918
(fig. 17.11.q)

Diopatra musseraensis Augener, 1918: 347, pl. 5 fig. 134, fig. 195, text-fig. 38.

Tube with projecting shell fragments. Body up to 50 mm. long, brown anteriorly but without an obvious pattern. Frontal antennae subulate. Ceratophore of median occipital antenna with 10 smooth rings. Mandibles with straight, tapered shafts. Gills normal with fairly long filaments. Pseudocompound setae are hooded and strongly bidentate. Comb-setae (fig. 17.11.q) have 15–25 teeth and the broad blades are rolled up to form a funnel which gives the appearance of having a broad central tooth.

Type locality: Mussera, Angola.

Records: Not recorded from South Africa.

Distribution: Tropical western Africa (Ghana to Angola (i)).

Diopatra cuprea cuprea (Bosc, 1802)
(fig. 17.12.a–d)

Nereis cuprea Bosc, 1802: 142.
Diopatra cuprea: Hartman, 1944: 54, pl. 1 figs. 9–14; Day, 1960: 350; Pettibone, 1963: 250, fig. 66.

Anterior end of tube with shell fragments attached edgeways. Body about 120 mm. long, diffusely brown anteriorly but without an obvious pigment pattern. Frontal antennae subulate. Ceratophore of median occipital antenna (fig. 17.12.a) with 9–12 rings. Mandibles (fig. 17.12.b) with straight, tapered shafts. Maxillae typical of the genus. Pseudocompound setae hooded and strongly bidentate (fig. 17.12.c). Comb-setae (fig. 17.12.d) appear on the 10th foot and have 18–30 teeth. Bidentate acicular setae appear on the ninth foot.

Type locality: Charleston, U.S.A.

Records: ? South West Africa (22/14/i, 26/15/i, s); Natal (29/31/s) and Mocambique (26/32/i and 23/35/e, s).

Distribution: U.S.A. (New England (i, s) to Florida and the Gulf of Mexico (i)); Brazil (i); tropical western Africa (Ghana (s) to Angola (s)); tropical Indian Ocean (i, s, d).

Diopatra cuprea punctifera Ehlers, 1908
(fig. 17.12.e–f)

Diopatra punctifera Ehlers, 1908: 78, pl. 10 figs. 1–11.
Diopatra cuprea var. *punctifera*: Day, 1960: 351.

Body 60–120 mm. long. Generally similar to *D. cuprea* with the following exceptions. Instead of being uniformly brown, there is a pattern of dark spots on anterior segments (fig. 17.12.f). Thus segments 4–8 have a transverse row of four spots. Further back the two spots on either side of the mid-dorsal line fuse leaving a pale streak down the middle of the back. In the nominate form the comb-setae have 18–25 teeth but in *D.c. punctifera* there are only 9–15 (fig. 17.12.e).

Type locality: Agulhas Bank, South Africa.

Records: False Bay (34/18/s) to Agulhas (35/20/s, d) and on to the eastern Cape (31/29/s).

Distribution: Endemic.

RHAMPHOBRACHIUM Ehlers, 1887

Prostomium with or without eyes. Occipital antennae short and stout. Tentacular cirri present. Branchiae as simple or pectinate filaments. The first two to three feet enlarged, directed forwards and bear very long hooked setae often with spiney shafts and pseudocompound ends. Later setae include winged capillaries, comb-setae and bidentate acicular setae.

Type species: *Rhamphobrachium agassizi* Ehlers, 1887.

Key to Species

1 Branchiae as simple filaments throughout and start on setiger 30–40. Pseudocompound hooks usually bidentate and hooded . . . . . ***R. capense***
– Branchiae develop several filaments and start on setiger 7–12. Pseudocompound hooks unidentate and lack hoods in the adult 2
2 No compound setae with knife-like blades on setigers 4–7. (Branchiae from setiger 12) ***R. chuni***
– Compound setae present 3
3 Only the first two feet modified. Compound setae with knife-like blades . . ***R. bipes****
– The first three feet modified. Setiger 4 with falcigerous compound setae; later compound setae with knife-like blades. . . . . ***R. diversosetosum****

Rhamphobrachium capense Day, 1960
(fig. 17.12.g–k)

Rhamphobrachium capense Day, 1960: 355, fig. 11 i–l.

Body about 35 mm. long. Tube fragile and encrusted with large fragments of shell or coralline. Prostomium (fig. 17.12.g) with minute eyes, ovoid frontal antennae, and short subulate, curved occipital antennae. Peristome narrow, tentacular cirri short. The first three to four feet are directed forwards, each with a

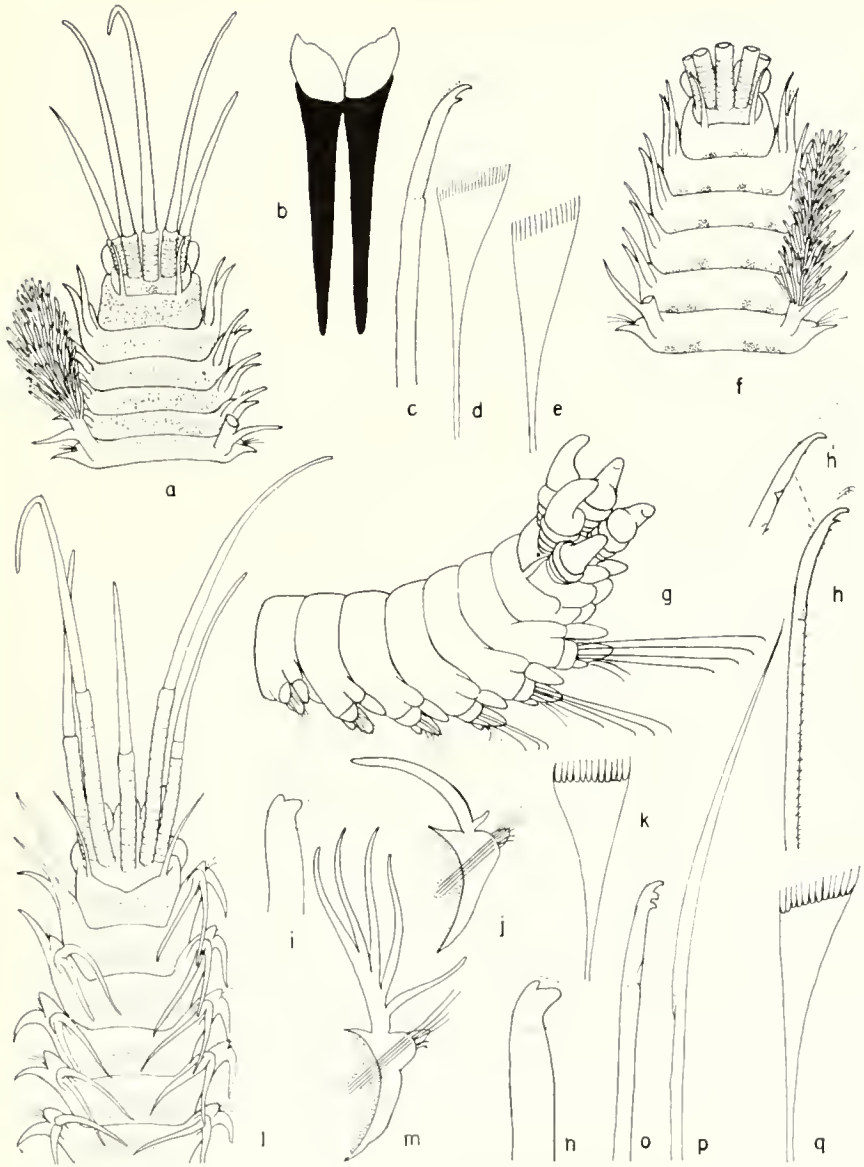

FIG. 17.12. *Diopatra cuprea*. (A) Anterior end. (B) Mandibles. (C) Pseudocompound seta. (D) Comb seta. *Diopatra cuprea punctifera*. (E) Comb seta. (F) Anterior end (ceratostyles omitted). *Rhamphobrachium capense*. (G) Lateral view of anterior end. (H, H[1]) Pseudocompound seta and variation. (I) Acicular seta. (J) Thirtieth foot. (K) Comb seta. *Onuphis eremita*. (L) Anterior end. (M) Thirtieth foot. (N) Acicular seta. (O) Pseudocompound seta. (P) Winged capillary. (Q) Comb seta.

stout, subulate dorsal cirrus, a setigerous lobe with a larger superior and a smaller inferior lobe and a subulate ventral cirrus. Ventral cirri become glandular pads after setiger 5. Gills (fig. 17.12.j) as simple filaments from the 30th–40th foot to the end of the body. Pseudocompound setae (fig. 17.12.h) usually bidentate but occasionally unidentate or tridentate and have expanded, bivalve hoods usually ending in a pair of minute claws. The shaft has two rows of small spines along its length. No compound setae with bidentate or knife-like blades in setiger 4. Posterior setae include many winged capillaries with long filiform tips, two fine comb-setae with about 12 teeth (fig. 17.12.k) and one to two stout, bidentate acicular setae with guard (fig. 17.12.i).

Type locality: False Bay, South Africa.

Records: False Bay (34/18/s) to the eastern Cape (33/27/s).

Distribution: Endemic.

Rhamphobrachium chuni Ehlers, 1908

Rhamphobrachium chuni Ehlers, 1908: 76, pl. 9 figs. 6–15; Fauvel, 1953: 261, fig. 132 a–b.

Body up to 190 mm. long and 5 mm. broad for 180 segments. The colour is greyish yellow flecked with dark pigment on the head and first three segments and the body is encased in a stout mud-encrusted tube. Prostomium without eyes, with ovoid frontal antennae and short, stout occipital antennae with four-ringed ceratophores. Mandibles with calcified cutting edges and tapered shafts. Maxillae with 8–10 teeth on Mx. II. Setigers 1–3 enlarged and directed forwards on either side of the head. They bear very long fine setae which are said to be pseudocompound, hooded and tridentate in juveniles but are simple, strongly curved hooks without hoods in adults. The shafts always have two rows of small spines. The dorsal and ventral cirri of the first three feet are both subulate. The fourth and all subsequent feet are directed laterally. Dorsal cirri are subulate and bear gills from the 9th to 12th setiger onwards; the first four to eight gills are simple filaments but later ones are pinnate with a maximum of six filaments on middle segments. The setigerous lobe is bluntly conical and the ventral cirrus is a low glandular cushion. Apart from the first three feet which bear only spiny-shafted hooks, the setae are mainly narrow-winged capillaries. There are no compound setae. Anterior feet from the 4th to 15th have about four fine-tipped acicula. Two bidentate and hooded acicular setae appear in the 18th foot and fine comb setae with numerous teeth a few segments earlier.

Type locality: Tropical Indian Ocean (0 N 98 E in 677 metres).

Records: Natal (29/31/d).

Distribution: Indo-west-Pacific (a).

ONUPHIS Audouin & Milne Edwards, 1833

Prostomium with or without eyes. Occipital antennae elongated. Tentacular cirri present. Branchiae as simple or pectinate filaments. Anterior feet not greatly produced forwards. Setae include pseudocompound hooks with smooth shafts in anterior feet and winged capillaries, comb-setae and bidentate acicular setae in later ones. Worms tubicolous.

Type species: *Onuphis eremita* Audouin & Milne Edwards, 1833.

Key to Species

1 Gills in adults as simple filaments throughout (subgenus ***NOTHRIA***) 4
– Gills in adults pectinate on middle segments at least (subgenus ***ONUPHIS***) 2
2 Gills begin on the first foot (fig. 17.13.b) 3
– Gills begin on the sixth to ninth foot . . . . . ***O.*** (***O.***) ***quadricuspis***
3 Tentacular cirri well separated and dorso-laterally situated (fig. 17.12.l)
O. (***O.***) ***eremita*** (p. 422)
– Tentacular cirri close together on either side of the mid-dorsal line (fig. 17.13.b)
O. (***O.***) ***quinquedens*** (p. 422)
4 Gills begin on the first setiger. Pseudocompound hooks tridentate with the third tooth fine (fig. 17.13.g) . . . . . ***O.*** (***N***) ***holobranchiata*** (p. 424)
– Gills begin on the fourth setiger. Pseudocompound hooks tridentate with the third tooth strong (fig. 17.13.h) . . . . . ***O.*** (***N.***) ***geophiliformis*** (p. 424)
– Gills begin on the ninth setiger. Pseudocompound hooks bidentate. First two feet project far forwards (fig. 17.13.l) . . . . . ***O.*** (***N.***) ***conchylega*** (p. 425)

Onuphis (*Onuphis*) *quadricuspis* Sars, 1872

Onuphis quadricuspis Sars, 1872: 407; Fauvel, 1923: 418, fig. 165 f–p.

Tube reinforced with mud. Body 40–60 mm. long with brown bars anteriorly. Anterior segments rounded, later ones flattened dorsally. A pair of minute anterior eyes. Occipital antennae long, ceratophores short with about 6 rings. Maxillary formula: Mx. I = 1 + 1; Mx. II = 7 + 8; Mx. III = 8 + 0; Mx. IV = (4–6) + (7–8). Tentacular cirri inserted behind the inner lateral antennae and shorter than the peristomial segment. Ventral cirri subulate on setigers 1–3. Branchiae start on the sixth to ninth setiger, reach a maximum of four filaments and decrease to a single filament after setiger 40. Pseudocompound hooks hooded and tridentate. Posterior feet bear winged capillaries, comb-setae and bidentate acicular setae with guards. Acicula yellow.

Type locality: Dröbach, Norway.

Records: Cape (34/18/s). (Doubtful).

Distribution: North Atlantic from Norway (d), Sweden (d, vd), Canada to Massachusetts (s, d, vd); English Channel (s) to Senegal (s).

Onuphis (*Onuphis*) *eremita* Audouin & Milne Edwards, 1833
(fig. 17.12.l–q)

Onuphis eremita Audouin & Milne Edwards, 1833: 226; Fauvel, 1923: 414, fig. 163.

Tube thin and encrusted with sand. Body 80–120 mm. long, iridescent, with red-brown bands anteriorly but pale posteriorly. Median occipital antennae (fig. 17.12.l) shorter than the inner laterals but its ceratophore is long and has 12–14 rings. Tentacular cirri inserted dorso-laterally and longer than the peristomial segment. Maxillary formula: Mx. I = 1 + 1; Mx. II = (6–7) + (8–9); Mx. III = (8–9) + 0; Mx. IV = 4 + (9–10). Large specimens with a presetal papilla on the 5th–10th foot. Branchiae from the first foot as simple filaments; they increase to two filaments by the 22nd–24th foot, reach a maximum of four to five filaments (fig. 17.12.m) and later decrease. Anterior hooded pseudocompound hooks (fig. 17.12.o) have three teeth or even four minute teeth; they extend over setigers 1–5. Posterior setae include winged capillaries (fig. 17.12.p), comb-setae with oblique blades and about 12 teeth (fig. 17.12.q) and two bidentate acicular setae with guard (fig. 17.12.n).

Type locality: Mediterranean coast of France.

Records: Cape (34 17′d to 33′25 s).

Distribution: N. Atlantic from France (i) and North Carolina (s) to Senegal (i); Mediterranean (i); Suez Canal; tropical Indian Ocean (i, s); Southern California (s).

Onuphis (*Onuphis*) *quinquedens* Day, 1951
(fig. 17.13.a–e)

Onuphis quinquedens Day, 1951: 40, fig. 6 a–h.

A large species reaching 350 mm. No colour pattern. Anterior segments rounded, later ones flattened dorsally. Prostomium without eyes; occipital antennae short and tapered but their ceratophores are long with 18–30 rings. Maxillary formula: Mx. I = 1 + 1; Mx. II = (5–6) + (5–6); Mx. III = (5–7 + 0: Mx. IV = 5 + (5–8). Tentacular cirri (fig. 17.13.b) inserted close together on either side of a notch behind the median occipital antenna. Anterior feet project forwards but the sixth and subsequent ones project dorsally. Gills start as simple tapered filaments on setiger 1, become pectinate on setiger 8–10, attain a maximum of 8–12 filaments (fig. 17.13.d) and extend over the whole body. Anterior feet have one to two capillaries and bidentate pseudocompound hook (fig. 17.13.c). Bidentate acicular setae (fig. 17.13.a) appear on the 10th foot. Comb setae with about 25 teeth (fig. 17.13.e).

Type locality: Umpangazi, Zululand.

Records: False Bay (34 18 i) and Natal (28/32, i).

Distribution: Endemic.

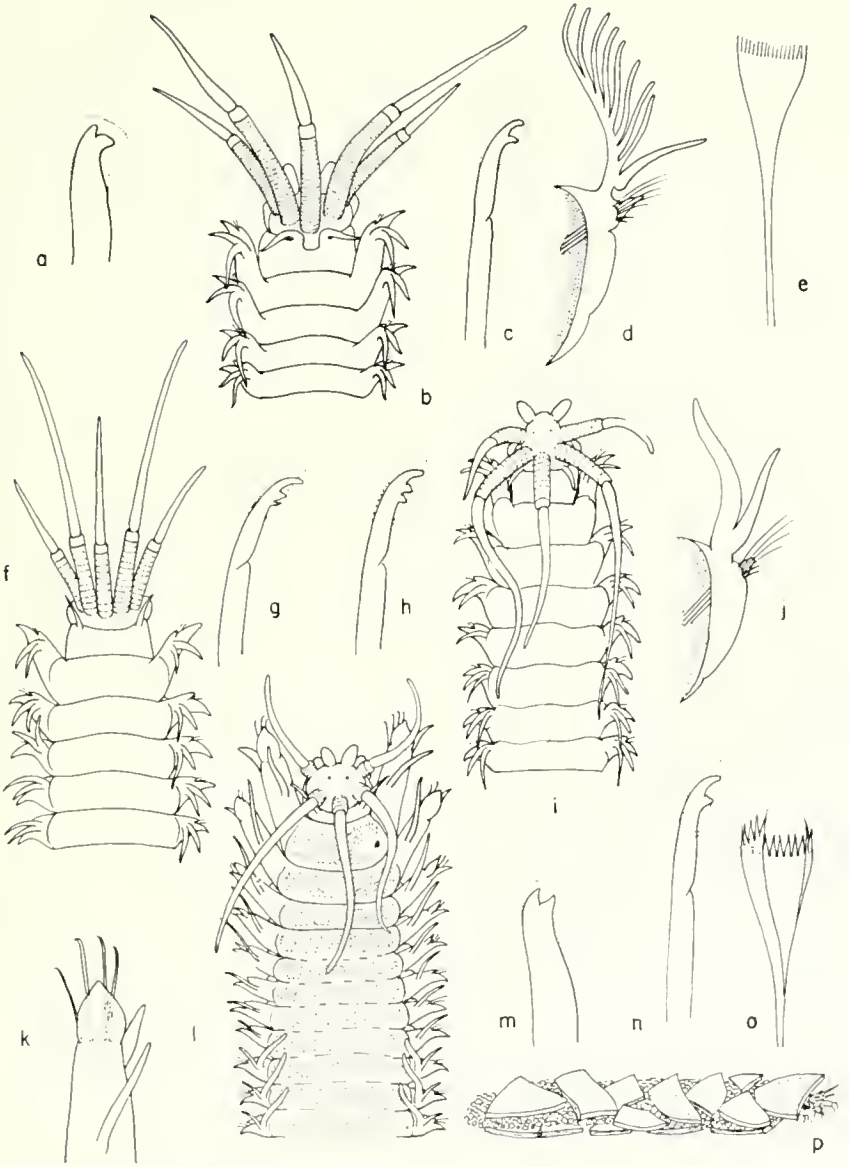

FIG. 17.13. *Onuphis quinquedens*. (A) Acicular seta. (B) Head. (C) Pseudocompound hook. (D) Middle foot. (E) Comb seta. *Onuphis holobranchiata*. (F) Anterior end. (G) Pseudocompound hook. *Onuphis geophiliformis*. (H) Pseudocompound hook. (I) Anterior end. (J) Twelfth foot. *Onuphis conchylega*. (K) Dorsal view of first foot. (L) Anterior end. (M) Acicular seta. (N) Pseudocompound hook. (O) Comb seta. (P) Tube.

Onuphis (*Nothria*) *holobranchiata* Marenzeller, 1879
(fig. 17.13.f–g)

Onuphis (*Nothria*) *holobranchiata* Marenzeller, 1879: 132; Izuka, 1912: 106, pl. 11 figs. 10–12; Day, 1960: 336.

Tube reinforced with coarse sand. Body about 60 mm. long, somewhat depressed, often iridescent with a pattern of brown bars and a white median stripe. Prostomium with several eye-specks and a median antenna rather shorter than the inner laterals (fig. 17.13.f). Ceratophores with 9–12 rings. Maxillae delicate and pale; formula: Mx. I = 1 + 1; Mx. II = 7 + 7; Mx. III = 7 + 0; Mx. IV = 7 + 12. First three feet not enlarged but directed obliquely forwards. Gills as simple filaments from the first setiger to the end of the body. Pseudocompound hooks persist to the 7th foot. They are tridentate but the third tooth is small and sometimes difficult to see (fig. 17.13.g). Bidentate acicular setae appear on the 10th foot. They possess guards and the secondary tooth is larger than the terminal one. The comb-setae have about 18 tethe. The ventral cirri are cirriform for the first five feet.

Type locality: South Japan.

Records: South West Africa (26/15/s); Cape (32/18/s to 34/18/s).

Distribution: Tropical Indian Ocean (s) and Japan.

Onuphis (*Nothria*) *geophiliformis* Moore, 1903
(fig. 17.13.h–j)

Nothria geophiliformis Moore, 1903: 445, pl. 25 figs. 57–59.
Onuphis (*Northria*) *geophiliformis*: Day, 1960: 337.

Tube unknown. Body about 30 mm. long. Prostomium (fig. 17.13.i) with eyes. Median antenna shorter than the inner laterals and has eight to nine rings. Maxillae pale, formula: Mx. I = 1 + 1; Mx. II = 8 + 9; Mx. III = 8 + 0; Mx. IV = 9 + 12. A brown bar across peristome when fresh. First three feet not enlarged. Gills (fig. 17.13.j) as simple filaments throughout. They appear on setiger 4–5 and persist until about 40 segments from the pygidium. Pseudocompound hooded hooks of the first six feet are tridentate with the second and third tooth well developed (fig. 17.13.h). Bidentate acicular setae appear on the 9th or 10th foot and comb-setae with about 12 teeth appear a little later. Ventral cirri subulate on the first five feet.

Type locality: Japan.

Records: False Bay (34/18/s) to the eastern Cape (33/28/s).

Distribution: N. Pacific (Bering Sea to Southern California) and Japan (d).

Onuphis* (*Nothria*) *conchylega Sars, 1835
(fig. 17.13.k–p)

Onuphis (*Northria*) *conchylega* Sars, 1835: 61.
Northria conchylega: Hartman, 1944: 85, pl. 5 figs. 105–112; pl. 17 figs. 337, 338.
Onuphis conchylega: Fauvel, 1923: 415, fig. 164; Fauvel, 1953: 255, fig. 128 a–m.

A characteristically free flattened tube (fig. 17.13.p) covered with large shell fragments. Body 40–150 mm. long. Prostomium cordate with a central brown spot, an anterior pair of minute eye spots and a large pair of eyes external to the inner lateral antennae. Ceratophores short with three to four rings, ceratostyles long and tapered reaching setiger 6. Mandibles with an ill-defined tooth on the calcareous cutting edge and straight diverging shafts. Maxillae pale, the formula being Mx. I = 1 + 1; Mx. II = 6 + (6–7); Mx. III = 8 + 0; Mx. IV = (6–8) + (8+10); Mx. V = 0 + 0 (dark toothless plates). Tentacular segment short but the tentacular cirri long, reaching the anterior margin of the prostomium. Setigers 1–3 greatly enlarged and project forward, each with a stout setigerous lobe and much smaller dorsal and ventral cirri. The presetal lamella is dorsal and heart-shaped (fig. 17.13.k) but the postsetal lobe is cirriform and elongated from the 2nd–15th foot. Thereafter both lobes become reduced and obscure. Ventral cirri tapered on the first two to three feet but thereafter swollen and cushion-like. Dorsal cirri elongate and tapered on anterior feet but later reduced and smaller than the branchial filaments. A single branchial filament from setiger 9–13 according to size. Setigers 1–3 or 1–4 with three stout pseudocompound or simple hooks with smooth shafts and bidentate ends usually protected by small guards (fig. 17.13.n). From setiger 4 onwards three to four smooth-winged capillaries and about six fine comb-setae (fig. 17.13.o) with curved blades appear bearing 10–12 teeth. Two long stout acicular setae appear on the 10th–15th foot; they have bent, bidentate ends (fig. 17.13.m).

Type locality: Dredged off Norway.

Records: Cape (34/21/s); Natal (29/31/s); Mocambique (26/32/s).

Distribution: Cosmopolitan in dredgings from the Arctic to the subantarctic (s, d, vd).

Subfamily **LYSARETINAE** Kinberg, 1865

Prostomium without palps but with eyes and usually three small antennae partially hidden by a fold of the peristomial segment which is biannulate. No tentacular cirri. Mandibles well developed. Maxillae consist of five pairs of toothed plates with a pair of long narrow supports and a median unpaired piece in free-living forms. Parasitic forms with reduced maxillae. Parapodia uniramous with flattened or strap-like dorsal cirri. No ventral cirri. Setae mainly simple and include capillaries and acicular setae.

Records from southern Africa

Oenone fulgida Savigny	—Ms
as *Aglaurides fulgida* (Savigny)	27Mi, 40Pi
? as *Larymna cirrosa* Kinberg	3Pi

Key to Genera

1 Free living. No compound setae. No branchiae. Three very short antennae ***OENONE***
– Parasitic. Compound setae and branchiae present. No antennae . . ***IPHITIME****

OENONE Savigny, 1820
(Synonyms *AGLAURIDES* Ehlers, 1868 and *HALLA* Costa, 1844)

Prostomium rounded, without palps but with eyes and three short antennae at the posterior margin partially hidden by the peristomial fold. Only the biannulate peristomial segment without parapodia. Maxillae consist of five pairs of toothed plates with long narrow supports plus a median unpaired piece. Dorsal cirri elongated and flattened. Setae simple. No branchiae.

Type species: *Aglaura fulgida* Savigny, 1818.

Oenone fulgida (Savigny, 1818)
(fig. 17.14.a–g)

Aglaura fulgida Savigny, 1818: 326.
Oenone lucida Savigny, 1820: 56.
Aglaurides erythraeensis Gravier, 1900: 278, pl. 14 figs. 99–103, text-figs. 154–159; Fauvel, 1953: 250, fig. 125 a–f.

Length 100–350 mm. Prostomium (fig. 17.14.b) rounded with two pairs of eyes of which the outer pair are the larger. Three stout antennae much shorter than the prostomium and often hidden by the biannulate peristomial fold. Mandibles (fig. 17.14.d) well chitinised. Maxillae with long slender supports and a very faint, dagger-shaped median piece. The jaws are often slightly asymmetrical, since Mx. I may possess more teeth on the right side. The first tooth on each plate is much larger than the rest. Maxillary formula: Mx. I = 12 (or 7 and 5) + 7; Mx. II = 9 + 15; Mx. III 6 + 5; Mx. IV = 6 + 6; Mx. V = 1 + 1. Parapodia (fig. 17.14.e) similar throughout, each with a flattened, strap-like dorsal cirrus constricted at the base, a short rounded presetal lobe and a longer postsetal lobe. Setae include fine tapered capillaries (fig. 17.14.f) and, in posterior feet, two yellow acicular setae with bidentate tips (fig. 17.14.g).

Type locality: Red Sea.

Records: Natal (30/30/i); Mocambique (26/32/i and 23/35/e, s); Madagascar (i, s).

Distribution: Suez (i); Red Sea (i, s); tropical Indo-west-Pacific (i, s).

Subfamily **LUMBRINERINAE** Malmgren, 1867

Elongate cylindrical worms with small uniramous parapodia and usually without head appendages. Prostomium rounded to conical. No palps. No eyes. Usually without antennae. Two anterior apodous segments. No tentacular cirri. Mandibles and maxillae well developed in free-living genera and consist of four to five pairs of

symmetrical toothed plates with a pair of short broad supports but no median unpaired piece. Parapodia with dorsal cirri rudimentary or absent and no ventral cirri. The setigerous lobe has a presetal and a postsetal lip and in *Ninoe* the latter may subdivide to form branchial lobes. Setae include winged capillaries and simple or compound hooded hooks.

Records from southern Africa

Lumbrineris aberrans Day	56Cs
Lumbrineris albidentata Ehlers	15Cs, 21Cs, 34Cd, 50Csd, —Ns, Pd
Lumbrineris brevicirra (Schmarda)	50Csd, 55Ca, —Nd
Lumbrineris cavifrons Grube	8Ci, 9Ci, 27Mi, 41Ci, 45Pi, 50Cs
as *Lumbrineris debilis* (non Grube)	36Ci
as *Lumbrineris tetraura* (non Schmarda)	33Cs
Lumbrineris coccinea (Renieri)	12Ci, 41Ci, 45Pi, 50Cs
as *Lumbrineris cavifrons* (non Grube)	13Ci
as *Lumbrineris capensis* (? Grube)	12Ci
as *Lumbrineris albifrons* (non Crossland)	36Ci
Lumbrineris floridana Ehlers	26Ai
Lumbrineris hartmani Day	41Ci, 50Cs
Lumbrineris heteropoda Marenzeller	40Pi, 45Pi,
Lumbrineris heteropoda difficilis Day	56Cs
as *Lumbrineris heteropoda* var. *atlantica* (non Kinberg)	36Cd, 37Cs, 50Csd
Lumbrineris inflata Moore	45NiPi
as *Lumbrineris albifrons* Crossland	40Ni
Lumbrineris latreilli Audouin & Milne Edwards	26Ai, 28Mi, 41Ci, 45Pi, 50Cs, —Nsd
Lumbrineris magalhaenis (Kinberg)	50Cs, 55Ca
as *Lumbrineris pettigrewi* McIntosh	10Cd
Lumbrineris meteorana Augener	34As, 56Csd
as *Lumbrineris* cf. *meteorana* Augener	50Cs
Lumbrineris oculata Ehlers	15Ci
Lumbrineris papillifera Fauvel	27Mi, 45NiPi
as *Lumbrineris dubeni* Kinberg	3Pi
Lumbrineris tetraura (Schmarda)	13Ci, 15Cs, 21Ci, 33Cs (pp.), 36Ci, 40Ni, 41Ci, 50Cs
as *Notocirrus tetraurus* Schmarda	4Ci
as *Lumbrineris nardonis* (? Grube)	12Ci
as *Lumbrineris capensis* (non Grube)	12Ci
as *Lumbrineris impatiens* Claparède	26Ai
Ninoe lagosiana Augener	26Ai

BIOLOGICAL NOTES

The lumbrinereids are carnivorous but it it is not known whether they are mainly predaceous or mainly scavengers. They commonly burrow in sandy mud and have lost the prostomial antennae and eyes found in most of the eunicids. On the other hand, the anterior end of the prostomium is richly supplied with nerves and the jaws are very powerful. A few species of *Lumbrineris* are found under stones or in algal tufts. A common example is *L. coccinea* and it is noteworthy that this and other creeping forms have rounded prostomia and short bodies as compared with the conical prostomia and elongate bodies of the more typical burrowers.

THE MAIN DIAGNOSTIC CHARACTERS

The most useful features include the shape of the prostomium, the number of teeth on the maxillary plates, the shape of the parapodial lobes, the presence or absence of compound hooks and their segmental arrangement.

The prostomium. Although this is a soft structure and thus liable to distortion, a rounded prostomium seems to be associated with a short body and a creeping habitat while a conical prostomium is associated with a long body and burrowing habits.

The jaws. While the mandibles are very constant and the maxillary supports surprisingly variable within a single species the number of teeth on the maxillary plates is a useful character. In many species the maxillary formula is Mx. I – 1 + 1; Mx. II – (4–5) + (4–5); Mx. III – 2 + 2; Mx. IV – 1 + 1. Departures from this formula are important. Thus Mx. II may have three large teeth. Mx. III may be small plates with a single tooth or large plates with a cutting edge on which no definite tooth is developed. Mx. IV rarely has more than one tooth but the whole plate may be very large and pale with a black margin.

Parapodial lobes. The basic structure is a low rounded *presetal lobe*, a longer *postsetal lobe* and setae between the two. The parapodial lobes change in shape along the length of the body and both anterior and posterior parapodia must be examined. In anterior feet the postsetal lobe is usually a simple blunt cone but it may be flattened and *auricular* in shape. In posterior feet it usually elongates and may even grow longer than the setae in extreme cases; in other species, however, the anterior lobe increases until the two lobes are *subequal* or both lobes may change into slender filaments near the posterior end of the body. In such cases anterior fragments cannot be identified with certainty.

Acicula and setae. The acicula are usually pale and black acicula are diagnostic when they occur. Winged capillaries appear on the first foot and usually disappear about the middle of the body. They seldom provide useful characters. The hooded hooks (sometimes called *crotchets*) may be simple throughout or jointed (*compound*) in anterior feet and simple in posterior feet. The length of the hood is also a useful character though the posterior hooks always have shorter hoods than the anterior ones. The number of teeth at the apex of the hook is of doubtful value except in extreme cases. Hooks may appear on the first foot or not until the middle of the body and their segmental arrangement is important but their exact position becomes

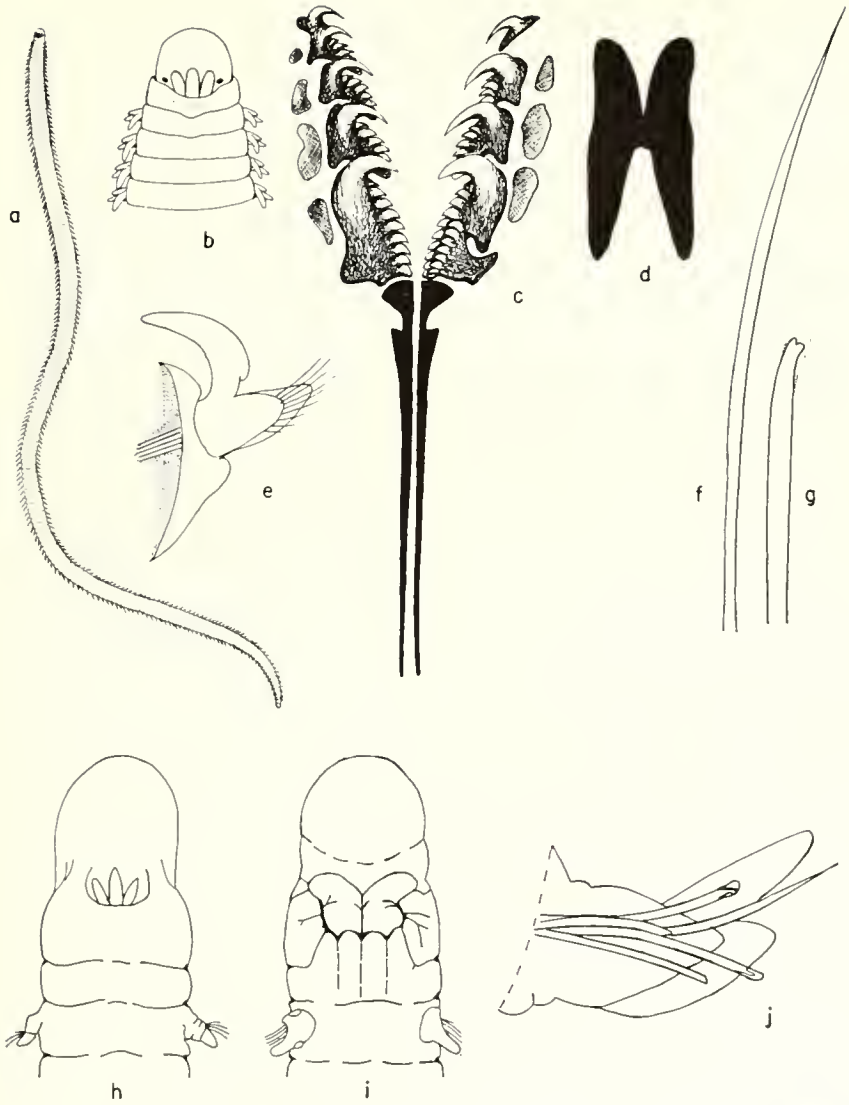

FIG. 17.14. *Aglaurides fulgida*. (A) Entire worm (half natural size). (B) Head. (C) Maxillae. (D) Mandibles. (E) Foot. (F) Capillary seta. (G) Acicular seta. *Augneria tentaculata* (after Monro 1930). (H) Dorsal view of head. (I) Ventral view of head. *Vinoe lagosiana* (after Augener). (J) Posterior foot with postsetal lobe and gill.

less definite the later they appear. Within a single species variations between setigers 1–4 or 10–16 or 30–50 are to be expected.

KEY TO GENEVA

1 Three small antennae partly hidden by the peristomial fold . . . . ***AUGNERIA***
– No antennae 2
2 Cirriform branchiae arise from the postsetal lobes in some parapodia . . . ***NINOE***
– Branchiae absent . . . . . ***LUMBRINERIS***

AUGNERIA Monro, 1930

Prostomium with three small antennae partly hidden by a peristomial fold. No eyes. Mandibles well developed. Maxillae consist of four symmetrical pairs of toothed plates with a pair of short broad maxillary supports. No median unpaired piece. Peristomium and next segment apodous and achaetous. No branchiae nor cirri. Setae include winged capillaries, and hooded hooks.

TYPE SPECIES: *Augneria tentaculata* Monro, 1930.

Augneria tentaculata Monro, 1930
(fig. 17.14.h–i)

Augneria tentaculata Monro, 1930: 140, fig. 52 a–k; Monro, 1936: 155.

Maximum length 135 mm. by 3 mm. for 110 segments. Body cylindrical, generally resembling a species of *Lumbrineris*. Prostomium (fig. 17.14.h, i) ovoid to rounded, but without eyes. Three small antennae in a small pocket formed by a fold of the peristomium. Peristomium and the next segment apodous and achaetous. A pair of buccal cushions in front of the mouth. Mandibles well developed with short divergent shafts. Maxillae consist of four symmetrical toothed plates and small supports twice as long as broad. Dental formula: Mx. I = 1 + 1 (short, stout pincers); Mx. II = 3 + 3; Mx. III = 2 + 2; Mx. IV = ? 1 + ? 1 (large rectangular plates without a definite tooth). Anterior feet with a low presetal lobe and a larger postsetal lobe shaped like a dog's ear. Posterior feet with subequal lobes the postsetal one having a superior point. Setae include winged capillaries and compound hooks anteriorly; in middle and posterior feet the blades of the capillaries become very narrow and the hooks become simple. No acicula seen.

TYPE LOCALITY: Dredged off South Orkney Islands.

RECORDS: Not recorded from southern Africa.

DISTRIBUTION: Subantarctic (d); Antarctic (d).

NINOE Kinberg, 1865

Prostomium without antennae. Maxillae consist of four pairs of toothed plates with short, broad supports. Mandibles well developed. Cirriform gills arise from the postsetal lobes of some parapodia. Setae include capillaries and hooded hooks.

TYPE SPECIES: *Ninoe chilensis* Kinberg, 1865.

Ninoe lagosiana Augener, 1918
(fig. 17.14.j)

Ninoe lagosiana Augener, 1918: 371, pl. 5 figs. 123–127, pl. 6 fig. 213, text-fig. 44.

Body about 35 mm. long with 120 segments. Prostomium conical. Eyes not seen. Nuchal pockets obvious at the prostomial/peristomial junction. The mandibles are lightly chitinised. Maxillary plates weak with lightly curved fangs, poorly developed teeth and short triangular supports. Dental formula: Mx. I = 1 + 1; Mx. II = 4 + 5; Mx. III = 3 + 3; Mx. IV = 1 + 1. Anterior feet with a low, rounded presetal lobe and a longer digitiform postsetal lobe. A single digitiform gill arises from the postsetal lobe in the middle of the body, and two gills are present in posterior feet (fig. 17.14.j). Anterior setae are slender winged capillaries. Simple hooded hooks appear on setiger 37 and become more numerous further back.

Type locality: Lagos, Nigeria.

Records: Not recorded from South Africa.

Distribution: Nigeria (i), Angola (i).

LUMBRINERIS Blainville, 1828

Prostomium conical or globular without eyes or antennae. Maxillae consist of four toothed plates with short broad supports. Mandibles well developed. Dorsal cirri vestigal or absent. No gills, Feet with a single presetal lobe and a single postsetal lobe. Setae include winged capillaries and hooded hooks which may be simple or jointed.

Type species: *Lumbricus fragilis* Müller, 1776.

Key to Species

1 Presetal and postsetal lobes subequal in posterior feet. Prostomium conical . . 2
– Postsetal lobe markedly longer in posterior feet. Prostomium conical or rounded . 6
2 Anterior hooded hooks jointed (fig. 17.15.k) 3
– Anterior hooded hooks simple, elongated. (Postsetal lobe of anterior feet dorso-ventrally deeper than long). (Fig. 17.16.a, b) 5
3 Mx. II with three large teeth. Mx. IV a large white plate with a black edge (fig. 17.15.h) 4
– Mx. II with four to five teeth. Mx. IV black with one tooth. (Posterior feet with two short lobes). (Fig. 17.15.a, d) . . . . . ***L. magalhaensis*** (p. 432)
4 Mandibular shafts in contact throughout. Last few feet with elongated thread-like lobes (fig. 17.15 h–n) . . . . . ***L. meteorana*** (p. 434)
– Mandibular shafts divergent posteriorly. Last few feet with stout lobes (fig. 17.15.q) ***L. albidentata*** (p. 434)
5 Posterior feet with small lobes always shorter than the setae . ***L. brevicirra*** (p. 435)
– Posterior feet develop very long slender lobes longer than the setae . . ***L. bifilaris***
6 Prostomium rounded. Body short (fig. 17.16.i, j) 7
– Prostomium conical. Body ellongate (fig. 17.15.b, o) 10
7 Hooded hooks jointed in the first few feet; later hooks simple 8
– Hooded hooks simple throughout 9

8 Mx. III with three to four teeth; Mx. IV with two to three (fig. 17.16.d) ***L. inflata*** (p. 435)
– Mx. III with two teeth; Mx. IV with one (fig. 17.16.l) . . . ***L. coccinea*** (p. 436)
– Mx. III with one tooth; Mx. IV with two . . . . . ***L. oculata*** (p. 436)
9 Mx. II with four to five teeth; Mx. III with two. Capillaries stop at setiger 20–30 ***L. cavifrons*** (p. 438)
– Mx. II with five to seven teeth; Mx. III with two . . . . . ***L. capensis***†
– Mx. II with four to five teeth; Mx. III with one. Capillaries stop at setiger 16 ***L. debilis***†
10 Hooded hooks jointed in the first few feet; later hooks simple (fig. 17.16.s, t) ***L. latreilli*** (p. 438)
— Hooded hooks simple throughout 11
11 Hooks appear within the first few feet. (Postsetal lobe always shorter than setae) . 12
— Hooks appear after the 20th foot 13
12 Prostomium very long, and pointed. Mx. II with three teeth (fig. 17.17.b) ***L. aberrans*** (p. 439)
— Prostomium normal. Mx. II with four to five teeth . . . ***L. tetraura*** (p. 439)
13 Postsetal lobe of anterior feet auricular or shaped like a dog's ear, but enormously elongated in posterior feet (fig. 17.17.g). Acicula black . ***L. heteropoda difficilis*** (p. 440)
— Postsetal lobe of anterior feet digitiform. Acicula yellow 14
14 Postsetal lobe of posterior feet much shorter than the setae (fig. 17.17.j) ***L. hartmani*** (p. 440)
— Postsetal lobe of posterior feet slightly longer than the setae (fig. 17.17.o) . . . 15
15 Anterior feet with a rudimentary dorsal cirrus. No cirriform ventral papilla between posterior feet . . . . . ***L. heteropoda heteropoda*** (p. 440)
— No rudimentary dorsal cirrus. A cirriform ventral papilla between posterior feet in the adult (fig. 17.17.q) . . . . . ***L. papillifera*** (p. 442)

Lumbrineris magalhaensis Kinberg, 1865
(fig. 17.15.a–g)

Lumbrineris magalhaensis Kinberg, 1865: 568; Ehlers, 1897: 74; Day, 1960: 362, fig. 12 h–j.

Body up to 100 mm. long. Prostomium (fig. 17.15.b) conical. Dental formula: Mx. I = 1 + 1; Mx. II = 4 + 4; Mx. III = ?1 + ?1; Mx. IV = 1 + 1. Mx. III is curved cutting plate without a distinct tooth and the maxillary supports are short and broad (fig. 17.15.a). Feet with a low, rounded presetal lobe throughout. Postsetal lobe conical and compressed anteriorly; later the base of the foot becomes longer and in posterior feet the small posterior lobe is hardly longer than the anterior one (fig. 17.15.d). Setae include long winged capillaries in anterior feet (fig. 17.15.e) plus short-bladed compound hooks from setiger 1–4 to setiger 12–15. In posterior feet there are only simple hooks (fig. 17.15.g). Acicula yellow.

Type locality: Straits of Magellan.

Records: Cape (from 33/17/abyssal, 34/17/d, 34/18/s to 34/26/d) – few specimens.

Distribution: Chile (i, s, d); subantarctic islands (i, s, d); Antarctica (d).

† Doubtful species, not recorded since the original descriptions.

FIG. 17.15. *Lumbrineris magalhaensis.* (A) Maxillae. (B) Head. (C) Anterior foot. (D) Posterior foot. (E) Capillary seta. (F) Anterior compound hook. (G) Posterior simple hook. *Lumbrineris meteorana.* (H) Maxillae. (I) Mandibles. (J) Anterior foot. (K) Anterior compound hook. (L) Middle foot. (M) Posterior hook. (N) Far posterior foot. *Lumbrineris albidentata.* (O) Entire worm (natural size). (P) Maxillae. (Q) Mandibles. (R) Anterior foot. (S) Posterior foot. (T) Anterior compound hook. (U) Capillary seta. (V) Posterior hook.

Lumbrineris meteorana (Augener, 1931)
(fig. 17.15.h–n)

Lumbriconeris meteorana Augener, 1931: 300, fig. 8 (partim); Day, 1963a: 410, fig. 7 g–n
Lumbrineris cf. *meteorana*: Day, 1960: 358.

Body slender, about 20 mm. long with about 120 segments. Colour pale yellow. Prostomium bluntly conical. Maxillary formula: Mx. I = 1 + 1; Mx. II = 3 + 3 (the three teeth being characteristically stout, almost bilobed (fig. 17.15.h); Mx. III = ?1 + ?1 (cutting plates without obvious teeth); Mx. IV = 1 + 1 (large and rounded with dark edges and pale centres). Mandibles (fig. 17.15.i) poorly calcified with shafts united. Maxillary supports broad and triangular. Anterior feet (fig. 17.15.j) bilobed with the presetal lobe at first smaller than, but soon equal to the postsetal one. This condition persists over most of the body (fig. 17.15.l) but in the middle of the body the feet are markedly smaller than the anterior ones and in the tail region both lobes become long and filamentous but now the presetal one is slightly longer than the postsetal one and equals the length of the setae (fig.17.15.n).

Anterior setae include about two long-bladed compound hooks (fig. 17.15.k) and three to four winged capillaries. The latter decrease in number and end before the middle of the body. After the first 10–15 segments the hooks become both shorter and simple; two to three simple hooks (fig. 17.15.m) persist to the end of the body. Acicula yellow.

Type locality: Dredged off South West Africa (17° 13′S.).

Records: South West Africa (26/14/d, 17/11/s); Cape (from 32/17/d and 34/18/s to 34/26/d); Natal (30/30/s) – common in dredgings on muddy sand.

Distribution: Endemic.

Lumbrineris albidentata (Ehlers, 1908)
(fig. 17.15.o–v)

Lumbriconereis albidentata Ehlers, 1908: 97, pl. 13 figs. 7–13; Day, 1960; 357, fig. 12 a–b.

An elongate species reaching 100 mm. (fig. 17.15.o). Prostomium conical with a conspicuous nuchal slit at the prostomial peristomial junction. Jaws large and in juveniles the anterior segments are swollen to accommodate them. Mandibles (fig. 17.15.q) heavily calcified and the shafts widely divergent. Maxillae characteristic with three large teeth on Mx. II and Mx. IV as large white plates with a black border and indistinct teeth (fig. 17.15.p). Maxillary formula: Mx. I = 1 + 1; Mx. II = (2–3) + (2–3); Mx. III = 2 + 2; Mx. IV = ?1 + ?1. Maxillary supports long and triangular. Anterior feet (fig. 17.15.r) with a low presetal lobe and an orbicular postsetal lobe. Middle feet with subequal presetal and postsetal lobes directed obliquely upwards. Posterior feet longer and bilabiate with stout lobes as long as the basal part of the foot (fig. 17.15.s). Setae include winged capillaries from the first to the 50th foot and long compound hooks (fig. 17.15.t) from the first to the 30th foot. From the 31st to the 50th foot there are simple hooks and

capillaries (fig. 17.15.u) and from there on there are only simple hooks. Acicula yellow, four per foot.

Type locality: Agulhas Bank, South Africa.

Records: South West Africa (26/14/d and28/14/d); Cape (from 30/15/d and 34/18/s to 34/23/s, d); Natal (29/31/s, d); Mocambique (26/33/d) – common in deep dredgings on muddy sand.

Distribution: North Carolina (s, d.)

Lumbrineris brevicirra (Schmarda, 1861)
(fig. 17.16.a–e)

Notocirrus brevicirrus Schmarda, 1861: 117.
Lumbriconereis brevicirrus: Ehlers, 1904: 35, pl. 4 figs. 13–20, pl. 5 figs. 1–2; Day, 1960: 361, fig. 12 e–g.

Length about 50–70 mm. Prostomium conical. Maxillary formula: Mx. I = 1 + 1; Mx. II = 5 + 5; Mx. III = ?2 + ?2; Mx. IV = 1 + 1. (Mx. III is a cutting plate with indistinct teeth.) Anterior feet (fig. 17.16.b) small with a rudimentary presetal lobe and a deep compressed postsetal lobe which is dorso-ventrally deeper than long. Later the presetal lobe increases and the postsetal lobe decreases and in posterior segments the base of the foot is longer but the small postsetal lobe is not much longer than the presetal one (fig. 17.16.e). Slender capillaries continue to the middle of the body. Long-bladed simple hooks (fig. 17.16.a) appear within the first 10 setigers and continue posteriorly but the blade becomes shorter further back. Acicula pale throughout, but Knox (1960) reports black acicula in Chatham Island specimens.

Type locality: Port Jackson, Australia.

Records: Cape (32/16/d, 33/16/a, 34/18/s, 36/21/d); Natal (29/31/d) – a rare species.

Distribution: New South Wales (i, s); Chatham Island (d); Chile (i, s, d); Japan.

Lumbrineris inflata (Moore, 1911)
(fig. 17.16.d–h)

Lumbriconereis inflata Moore, 1911: 289.
Lumbriconereis albifrons Crossland, 1924: 50, text-figs. 65–72.

A small species about 20 mm. long with a spherical white prostomium (fig. 17.16.j) and a short orange body. Maxillae (fig. 17.16.d) characteristic: Mx. I = 1 + 1; Mx. II = (4–5) + (4–5); Mx. III = (3–4) + (3–4); Mx. IV = 2 + 2. Maxillary supports long. Anterior feet with a low, rounded presetal lobe and a longer but essentially similar postsetal one. Setae always longer than the postsetal lobe even in posterior feet. Acicula yellow. Winged capillaries (fig. 17.16.e) present in the first 30–40 feet. Compound (or incompletely compound) hooded hooks (fig. 17.16.g)

appear within the first three to four feet, become simple later and persist to the posterior end.

Type locality: California.

Records: Natal (30/30/i and 29/31/i); Mocambique (26/32/i) – few specimens on rocky shores.

Distribution: Circumtropical (Atlantic, Indian and Pacific (i, s)).

Lumbrineris coccinea (Renieri, 1804)
(fig. 17.16.i–m)

Nereis coccinea Renieri, 1904: p. xix.
Lumbriconereis coccinea: Fauvel, 1923: 432, fig. 172 g–n.

Body (fig. 17.16.i), small, about 40 mm. long, orange when alive but pale in alcohol. Prostomium (fig. 17.16.j) globular. Maxillary formula: Mx. I = 1 + 1; Mx. II = (4–5) + (4–5); Mx. III = 2 + 2; Mx. IV = 1 + 1 (see fig. 17.16.l). Anterior feet with a low, rounded presetal lobe and a longer conical postsetal one; posterior feet (fig. 17.16.m) slightly longer but essentially similar, the setae always exceeding the postsetal lobe. Acicula yellow. Winged capillaries extend over the first 30–40 feet. Compound hooks (fig. 17.16.k) extend from the first to about the 20th foot and they become simple with opaque white heads thereafter.

Type locality: Mediterranean Sea.

Records: South West Africa (26/15/i); Cape (from 29/16/i and 34/18/i, s to 32/28/i); Mocambique (26/32/i) — common in algal tufts.

Distribution: North Atlantic from the coasts of U.S.A. and the English Channel (i, s) south to Morocco (s, d) and Senegal (i, s); Mediterranean (s).

Lumbrineris oculata Ehlers, 1908)

Lumbriconereis oculata Ehlers, 1908: 96, pl. 13 figs. 1–6.

Body 20 mm. long for 87 segments; prostomium ovoid with dark pigment on the sides. Maxillary formula: Mx. I = 1 + 1; Mx. II = 3 + 4; Mx. III = 1 + 1; Mx. IV = 2 + 2. Mx. III is a very small plate and the maxillary supports are long and kite-shaped. Anterior feet have low presetal lobes and long postsetal lobes which are roughly ear-shaped with an inferior expansion. Posterior feet not known. Winged capillaries extend from the first to the 34th foot. Long-shafted compound hooks extend from the first few feet to the 16th and then simple short-headed hooks appear. Acicula unknown.

Type locality: Francis Bay, South Africa.

Records: Cape (34/24/l) – only the type specimen known.

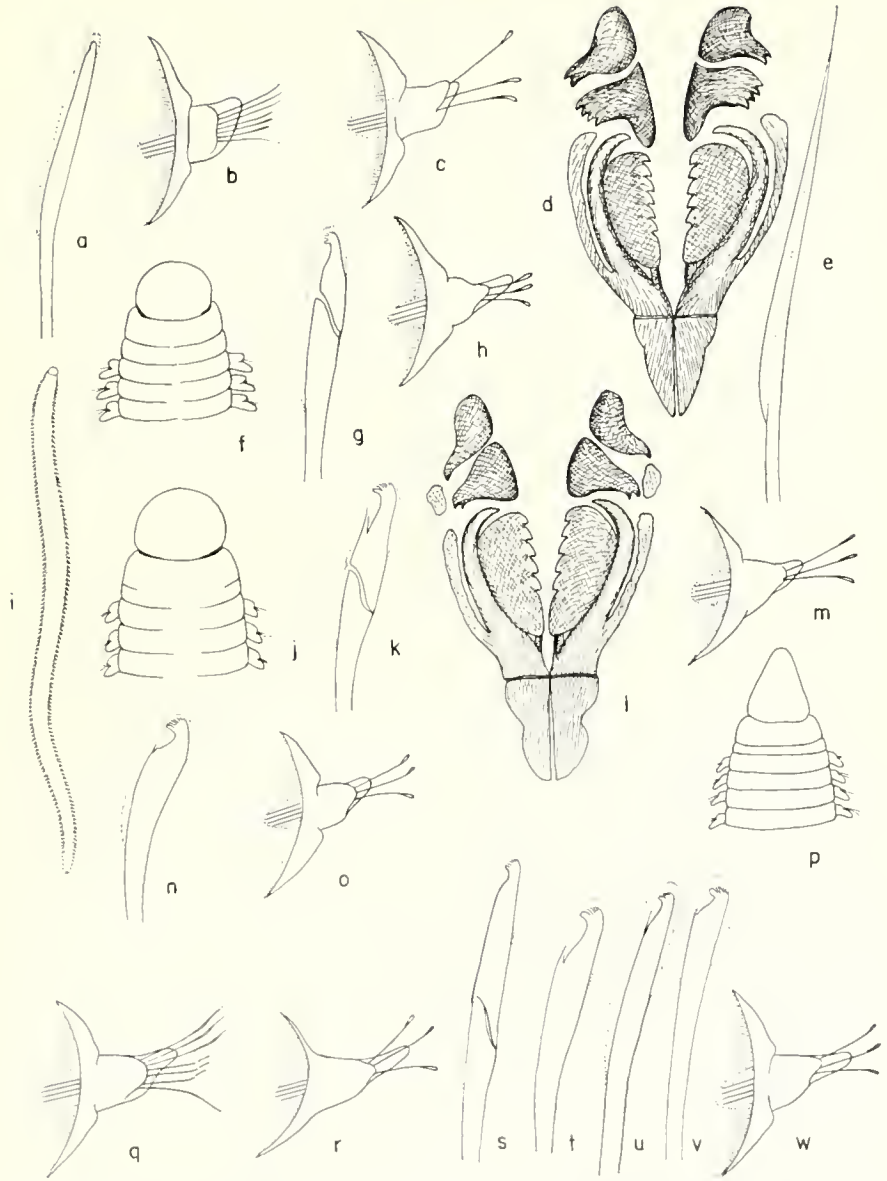

FIG. 17.16. *Lumbrineris brevicirra.* (A) Anterior hook. (B) Anterior foot. (G) Posterior foot. *Lumbrineris inflata* (based on a specimen from North Carolina). (D) Maxillae. (E) Capillary seta. (F) Head. (G) Anterior compound hook. (H) Posterior foot. *Lumbrineris coccinea.* (I) Entire worm (2.5 times life size). (J) Head. (K) Anterior compound hook. (L) Maxillae. (M) Posterior foot. *Lumbrineris cacifrons.* (N) Anterior simple hook. (O) Posterior foot. *Lumbrineris latreilli.* (P) Head. (Q) Anterior foot. (R) Posterior foot. (S) Anterior compound hook. (T) Posterior simple hook. *Lumbrineris tetraura.* (U) Anterior hook. (V) Posterior hook. (W) Posterior foot.

Lumbrineris cavifrons (Grube, 1869)
(fig. 17.16.n–o)

Lumbriconereis cavifrons Grube, 1869: 13; Day, 1953: 437, fig. 6 a–d.

Body 25–65 mm. long. Prostomium broadly rounded and somewhat flattened in front. Maxillary formula: Mx. I = 1 + 1; Mx. II = 4 + 4; Mx. III = 2 + 2; Mx. IV = 1 + 1. Maxillary supports rather long. Anterior feet have a low, rounded presetal lobe and a thumb-shaped postsetal lobe a little longer; posterior feet (fig. 17.16.o) essentially similar. Winged capillaries extend from the first foot to the 20th. Hooded hooks (fig. 17.16.n) appear within the first four feet and continue to the posterior end; they are all simple and the heads are rather short. Acicula yellow.

Type locality: False Bay, South Africa.

Records: South West Africa (26/15/i); Cape (from 34/18/i, s to 32/28/i, s); Natal (30/30/i); Mocambique (26/32/i) – common on rocky shores and in shallow dredgings.

Distribution: Doubtful.

Lumbrineris latreilli Audouin & Milne Edwards, 1834
(fig. 17.16.p–t)

Lumbrineris Latreilli Audouin & Milne Edwards, 1834: 168.
Lumbriconereis latreilli: Fauvel, 1923: 431, fig. 171 m–r.

Body up to 150 mm. long. Prostomium (fig. 17.16.p) conical. Maxillary formula: Mx. I = 1 + 1; Mx. II = (4–5) + (4–5); Mx. III = 2 + 2; Mx. IV = 1 + 1. Maxillary supports fairly long. Anterior feet (fig. 17.16.q) with a low, rounded presetal lobe and a larger, bluntly triangular postsetal lobe; posterior feet (fig. 17.16.r) with long conical postsetal lobes, but never as long as the setae. Winged capillaries extend from the first to the 40th or 50th foot. Long-bladed compound hooks (fig. 17.16.s) appear about the third foot and extend to the 25th foot where they are replaced by simple hooks whose heads become progressively shorter (fig. 17.16.t); these continue to the end of the body. Acicula yellow.

Type locality: France.

Records: Cape (from 34/18/s to 31/29 i, s); Natal (29/31/s, d); Mocambique (26/32 i) – fairly common in sand.

Distribution: Cosmopolitan in temperate and tropical seas (i, s, d).

Lumbrineris aberrans Day, 1963*
(fig. 17.17.a–e)

Lumbrineris aberrans Day, 1963b: 411, fig. 8 a–f.

A small species about 10 mm. long for 60 segments. Prostomium (fig. 17.17.a) conical, enormously elongated and equal to the length of the peristome plus the first four setigers. Shafts of mandibles completely united. Maxillary supports (fig. 17.17.6) very large. Maxillary formula: Mx. I = 1 + 1; Mx. II = 3 + 3; Mx. III = ?1 + ?1 (short plates each with an indistinct tooth); Mx. IV = 0 + 0 (oval plates without teeth). The parapodial lobes of the first six setigers are minute but on later segments they increase in size. Each is conical with a rudimentary presetal lobe and a conical postsetal lobe shorter than the setae (fig. 17.17.e). Posterior parapodia unknown. Winged capillaries are present from the first setiger and have very short broad blades (fig. 17.17.d). Simple hooks appear in setiger 4, each with two divergent teeth and a short, broad hood (fig. 17.17.c). Acicula pale.

Type locality: Agulhas Bank, South Africa.

Records: Cape (33/25/s) – a single specimen.

Lumbrineris tetraura (Schmarda, 1861)
(fig. 17.16.u–w)

Notocirrus tetraurus Schmarda, 1861: 117, 6 figs.
Lumbriconereis tetraurus: Day, 1953: 435 (with synonymy).
Lumbriconereis impatiens Claparède, 1868: 455; Fauvel, 1923: 429, fig. 171 a–l.

Body up to 250 mm. long. Prostomium conical. Dental formula: Mx. I = 1 + 1; Mx. II = (4–5) + (4–5); Mx. III = 2 + 2; Mx. IV = 1 + 1. The great dental plates have four or five teeth according to size and the maxillary supports are usually long and kite-shaped. Anterior feet with the presetal lobe low and rounded and the postsetal lobe longer and bluntly conical. Posterior feet (fig. 17.16.w) longer but essentially similar in shape. Winged capillaries from the first to about the 60th foot. Long-headed simple hooks (fig. 17.16.u) appear about the fourth foot and persist to the posterior end; but from about the 30th foot the head of the hook is shortened and tends to become whitish (fig. 17.16.v). Acicula yellow.

Type locality: Cape of Good Hope and Chile.

Records: South-west Africa (22/14/i); Cape (from 32/18/i, s and 34/25/e, i, s to 29/31/i); Natal (30/30/i to 28/32/i) – common in sand.

Distribution: Cosmopolitan in temperate and tropical waters.

*This species is close to *L. ocuta* (Verrill, 1875).

Lumbrineris hartmani (Day, 1953)
(17.17.i–k)

Lumbriconereis hartmani Day, 1953: 437, fig. 6 e–m.

Body long, reaching 100 mm. or more. Prostomium conical. Maxillary formula: Mx. I – 1 – 1; Mx. II – (4–5) – (4–5); Mx. III – 2 – 2; Mx. IV – 1 – 1. Maxillary supports long and triangular. Parapodia with unequal lobes, the anterior feet having a low, rounded presetal lobe and a longer, conical, postsetal one. In posterior feet (fig. 17.17.j) the postsetal lobe lengthens but never exceeds the length of the setae. Anterior setae are winged capillaries and these persist to the 60th or 70th foot. Long-bladed simple hooks (fig. 17.17.k) appear about the 25th–45th foot and continue to the end of the body but the blade becomes shorter after the middle of the body. Aciculа yellow.

Type locality: False Bay, South Africa.

Records: Cape (from 34 18 i, s to 33 27 s) – few specimens seen.

Distribution: Endemic but close to *L. fragilis*.

Lumbrineris heteropoda difficilis Day, 1963
(fig. 17.17.f–h)

Lumbrineris heteropoda difficilis Day, 1963: 410 (with synonymy) nom. nov. pro *Lumbrineris heteropoda* var. *atlantica* Day, 1960: 360, fig. 12 c–d non *Lumbriconereis atlantica* Kinberg, 1865: 568).

Body long, often exceeding 120 mm. Prostomium conical with dark pigments at the base. Dental formula: Mx. I – 1 – 1; Mx. II – (4–5) – (4–5); Mx. III – 2 – 2; Mx. IV – 1 – 1. Maxillary supports heart-shaped. Anterior feet (fig. 17.17.f) with the presetal lobe low and rounded and the postsetal lobe compressed and produced superiorly. In posterior feet (fig. 17.17.g) the postsetal lobe becomes very long and digitiform, greatly exceeding the length of the setae. Anterior setae are all winged capillaries, long and tapering superiorly and short and blunt inferiorly. Long-bladed simple hooks (fig. 17.17.h) appear about the 40th foot and become shorter in posterior feet. Most of the setae in posterior feet are short-bladed hooks but an occasional capillary appears here and there. Aciculа characteristically black.

Type locality: Dredged off Luderitz, South West Africa.

Records: South West Africa (22 14 s, 26 14 d and 27 15 s); Cape (from 32 18 d to 34 18 d).

Distribution: Tristan da Cunha (s); Brazzaville Congo (s).

Lumbrineris heteropoda heteropoda (Marenzeller, 1879)
(fig. 17.17.l–o)

Lumbrineris heteropoda Marenzeller, 1879: 30; Crossland, 1924: 4, text-figs. 1–7; Hartman, 1942: 121, fig. 10 e–g.

Body long, often reaching 120 mm. Prostomium (fig. 17.17.l) conical. Maxillary formula: Mx. I – 1 – 1; Mx. II – (4–5) – (4–5); Mx. III – 2 – 2; Mx. IV – 1 – 1. Mandibles with straight shafts. Parapodia with unequal lobes; in

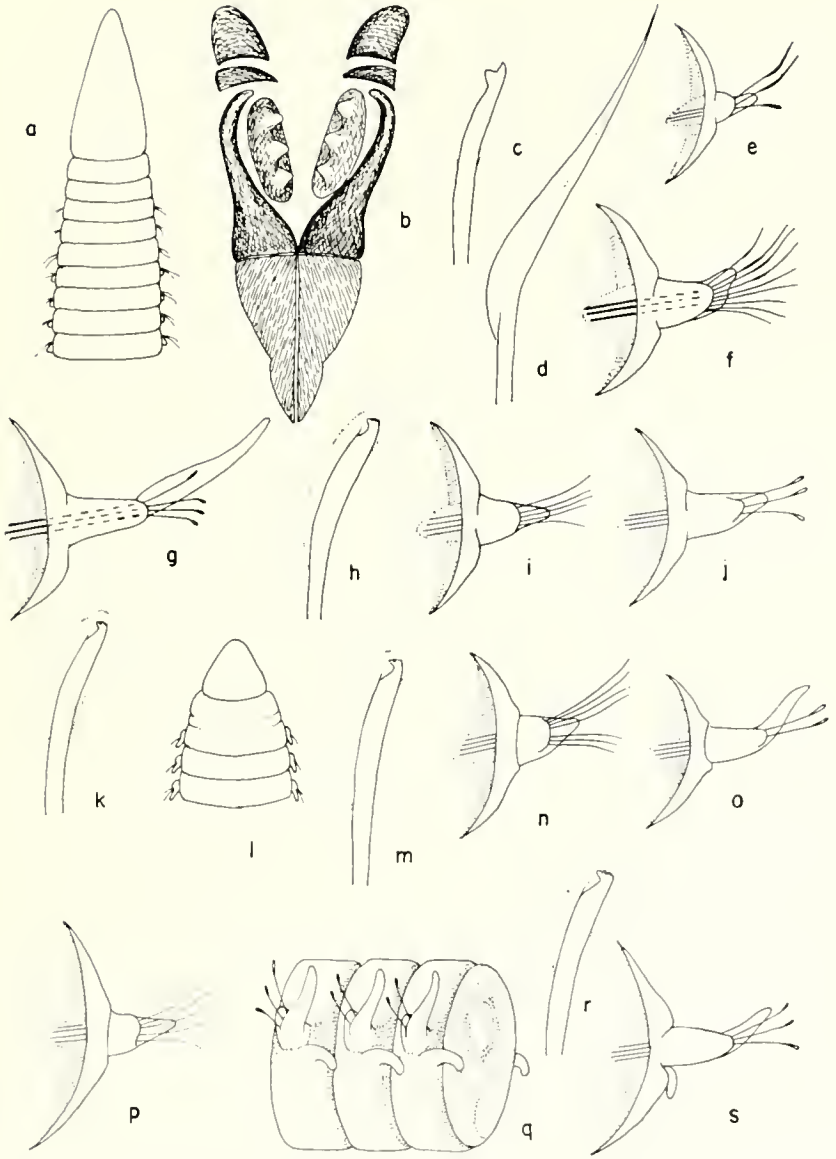

FIG. 17.17. *Lumbrineris aberrans.* (A) Head. (B) Maxillae. (C) Hook. (D) Winged capillary. (E) Middle foot. *Lumbrineris heteropoda difficilis.* (F) Anterior foot. (G) Posterior foot. (H) Hook from middle foot. *Lumbrineris hartmani.* (I) Anterior foot. (J) Posterior foot. (K) Hook from middle foot. *Lumbrineris heteropoda.* (L) Head. (M) Hook from middle foot. (N) Anterior foot. (O) Posterior foot. *Lumbrineris papillifera.* (P) Anterior foot. (Q) Ventrolateral view of three middle segments. (R) Hook from middle foot. (S) Posterior foot.

anterior feet (fig. 17.17.n) the presetal lobe is low and rounded and the postsetal lobe is longer and conical; in posterior feet (fig. 17.17.o) the postsetal lobe becomes much longer though it never exceeds the setae. In some specimens it is bent upward. A rudimentary dorsal cirrus is present. Anterior setae are all winged capillaries. Long-bladed simple hooks (fig. 17.17.m) appear about setiger 36. Posterior setae are two to three short-bladed hooks and sometimes a winged capillary as well. Acicula pale throughout.

Type locality: South Japan.

Records: Natal (28/32/i); Mocambique Is. (i); Madagascar (i).

Distribution: Senegal (i); Red Sea (i); tropical Indian Ocean (i, s); Japan (s).

Lumbrineris papillifera (Fauvel, 1919)
(fig. 17.17.p–s)

Lumbriconereis papillifera Fauvel, 1919: pl. 15 figs. 1–16.

Body long, reaching 100 mm. or more. Prostomium conical. Maxillary formula: Mx. I = 1 + 1; Mx. II = (4–5) + (4–5); Mx. III = 2 + 2; Mx. IV = 1 + 1. Maxillary supports long and triangular. Anterior feet (fig. 17.17.p) with a low, rounded presetal lobe and a longer, conical postsetal lobe. Posterior feet (fig. 17.17.s) with a short presetal lobe and a very long postsetal lobe which may exceed the length of the setae. In adults a ventral papilla may appear between the parapodia from the middle of the body onwards (fig. 17.17.q). Anterior setae are all winged capillaries. Short-headed simple hooks (fig. 17.17.r) appear about the 40th foot and completely replace capillaries before the middle of the body. Acicula yellow.

Type locality: Madagascar.

Records: Natal (29/31/i); Mocambieque (26/32/i and 23/35/e); Madagascar (i).

Distribution: Tropical East Africa.

Subfamily **ARABELLINAE** Hartman, 1944
(= ARABELLIDAE Hartman, 1944)

Elongate cylindrical worms with uniramous parapodia. Prostomium without appendages but usually with eyes. Mandibles present or absent. Free-living forms have well developed maxillae consisting of five pairs of toothed plates and long slender supports plus a shorter median piece. Two anterior apodous segments. Parapodia uniramous with dorsal cirri rudimentary or absent, but no ventral cirri. Setae are winged capillaries throughout, there being no hooded hooks.

Records from southern Africa

Arabella iricolor caerulea (Schmarda) . . .	50Cs
as *Arabella iricolor* (Mont.) var. *caerulea* (Schm.) .	13Ci, 41Ci
as *Aracoda caerulea* Schmarda	4Ci
as *Aracoda capensis* Kinberg	3Ci

as *Arabella iricolor* (non Montagu)	36CiNi, 40Ni
as *Maclovia iricolor capensis* (Kinberg)	12Ci
as *Notocirrus capensis* (Kinberg)	10Ci
as *Aracoda multidentata* Ehlers	26Ai
Arabella iricolor (Montagu)	27Mi, 28Mi
Arabella mutans (Chamberlin)	35Ci,45Pi,50Cs
Drilognathus capensis Day	50Cs
Drilonereis monroi Day	50Csd
Drilonereis falcata Moore	50Cs, 56Ws
Notocirrus australis Day	50Cs

BIOLOGICAL NOTES

The arabellids are superficially similar to the lumbrinerids and many of them have similar carnivorous and burrowing habits. Common examples are *Arabella iricolor caerulea* found in sand under stones and *Drilonereis falcata* which burrows in sand at deeper levels. But many other members of the subfamily are parasitic at least during the early stages of their life histories. *Labrorostratus* is known only as a parasite in *Odontosyllis*. *Drilognathus capensis* is parasitic in the body cavity of *Onuphis holobranchiata*; its small size, lack of setae and poorly developed jaws suggest that it may be the early stage of some large free-living form. Some species of *Drilonereis* and *Notocirrus* have certainly adopted this type of life history but it is difficult to relate the young parasitic stage with the adult free-living form.

THE MAIN DIAGNOSTIC CHARACTERS

The two important features are the jaws and the acicula.

Jaws. In parasitic forms both the mandibles and the maxillae are poorly developed and in some free-living forms the mandibles are absent. Possibly these are parasitic as juveniles and free living as adults as certain species are known to be. The maxillae are usually well developed but differ in the number of teeth on each plate and the degree of development of the first tooth in the series. Dissection is essential to see this.

Setae and Acicula. The winged capillaries may have serrated or smooth blades in the same species and do not provide reliable characters. As in most eunicids the acicula may be internal with tapered tips but in some genera they project as heavy, blunt spines.

Key to Genera

1 Endoparasitic with reduced jaws 2
– Free-living with well developed maxillae 3
2 Maxilla I falcate. Setae present . . . . . *LABIDOGNATHUS**
– Maxillae all vestigial. No setae (fig. 17.18.a–c) . . . *DRILOGNATHUS* (p. 444)
3 Acicula heavy, blunt and projecting (fig. 17.19.e) 4
– Acicula internal with fine tips. (Mx. I strongly falcate) . . . *ARABELLA* (p. 444)
4 Mx. I strongly falcate (fig. 17.19.b) . . . . . *DRILONEREIS* (p. 447)
– Mx. I with the first tooth only slightly larger than the subsequent teeth (fig. 17.19.j) *NOTOCIRRUS* (p. 448)

DRILOGNATHUS Day, 1960

Endoparasitic worms with reduced jaws. Maxillae vestigial, without teeth. Mandibles well developed. Parapodia well formed and possess acicula but no setae.

Type species: *Drilognathus capensis* Day, 1960.

Drilognathus capensis Day, 1960
(fig. 17.18.a–e)

Drilognathus capensis Day, 1960: 370, fig. 14 e–i.

A small species about 3 mm. long for 60 segments and parasitic in the body cavity of *Onuphis holobranchiata*. Prostomium (fig. 17.18.a) well separated from the two anterior achaetous and apodous segments, ovoid to conical and with a pair of eyes concealed below the skin. Mandibles (fig. 17.18.c) well developed and black, each triangular and without any recurved rostrum. Maxillae (fig. 17.18.b) vestigial, reduced to a long blackened streak or chitinous ridge on the roof of the stomadaeum. The third and subsequent segments are provided with well formed parapodia (fig. 17.18.d), each with a rudimentary presetal lobe and a bluntly conical postsetal one. Each parapodium has a single, stout, pointed, yellow aciculum often projecting through the skin in front of the postsetal lobe. No other setae. Posterior parapodia decreases in size and are not developed on the last 10 segments. Pygidium (fig. 17.18.e) conspicuous with large, laterally projecting anal cirri.

Type locality: Lamberts Bay, South Africa.

Records: Cape (32/18/s) – only one record.

ARABELLA Grube, 1850

Prostomium conical, usually with four eyes. Feet with unequal presetal and postsetal lobes. No gills. No ventral cirri. Dorsal cirri vestigial or absent. Only simple winged capillary setae, and without hooks or projecting acicula. Upper jaw of four to five toothed plates with long slender supports plus a median unpaired piece. Mandibles well developed, and Mx. I strongly falcate.

Type species: *Nereis iricolor* Montagu, 1804.

Key to Species

1	No hooded acicular setae	2
–	Hooded acicular setae (fig. 17.18.f) present	***A. mutans***
2	Dorsal cirri small but well formed (fig. 17.18.i)	***A. irricolor iricolor***
–	Dorsal cirri obscure (fig. 17.18.n)	***A. iricolor caerulea***

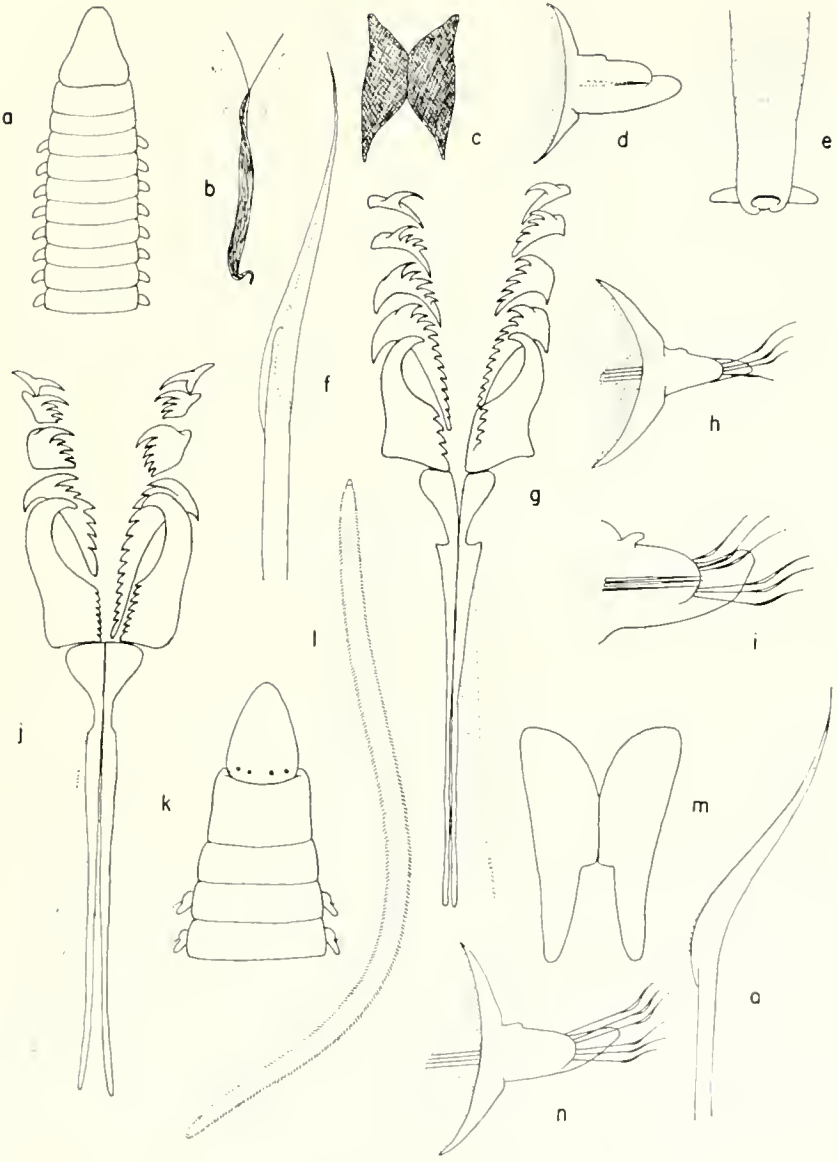

FIG. 17.18. *Drilognathus capensis*. (A) Head. (B) Vestiges of maxillae. (C) Mandibles. (D) Foot. (E) Posterior end. *Arabella mutans*. (F) Hooded acicular seta. (G) Maxillae. (H) Foot. *Arabella iricolor*. (I) Foot with dorsal cirrus. (J) Maxillae. (K) Head. (L) Entire worm (natural size). (M) Mandibles. *Arabella iricolor caerulea*. (N) Foot. (O) Winged capillary.

Arabella mutans (Chamberlin, 1919)
(fig. 17.18.f–h)

Cenothrix mutans Chamberlin, 1919: 330.
Arabella novecrinita Crossland, 1924: 71, figs. 85–95.
Arabella mutans: Monro, 1933: 501.

Length up to 190 mm. with more than 300 segments. Prostomium conical with four eyes. Maxillae (fig. 17.18.g) well developed. In the following formula the presence of an enlarged, falcate hook is shown by *1*: Mx. I = (*1* + 4) + (*1* + 4); Mx. II = (*o* + 12) + (*o* + 12); Mx. III = (*1* + 4) + (*1* + 4); Mx. IV = (*1* + 3) + (*1* + 3); Mx. V = *1* + *1*. Mandibles black, roughly M-shaped. Dorsal cirrus reduced to a slight swelling on the base of the parapodium (fig. 17.18h). Presetal lobe low and rounded. Postsetal lobe a longer blunt cone Acicula two to three, yellow, pointed and just piercing the skin between the parapodial lobes. Setae are winged capillaries with smooth or basally serrated blades. An inferior, asymmetrically hooded acicular seta (fig. 17.18.f).

Type locality: Easter Island.

Records: Cape (34/18/s, 34/21/1); Mocambique (26/32/i, 23/35/e).

Distribution: Easter Is.; Zanzibar; Cape Verde Is.; North Carolina (s).

Arabella iricolor iricolor (Montagu, 1804)
(fig. 17.18.i–m)

Nereis iricolor Montagu 1804: 82.
Arabella iricolor: Fauvel, 1923: 438, fig. 175 a–h.

Body (fig. 17.18.l) tough, wirey, iridescent, up to 100 mm. long. Prostomium (fig. 17.18.k) bluntly conical with four eyes in a transverse row across the posterior margin. Mandibles (fig. 17.18.m) strong, black, roughly H-shaped. In the following maxillary formula the presence of an enlarged first tooth is a series is indicated by *1*: Mx. I = (*1* + 9) + (*1* + 8); Mx. II = 8 + 14; Mx. III = 7 + 5; Mx. IV = (*1* + 4) + (*1* + 3); Mx. V = *1* + *1*. Body segments short and crowded. Parapodia (fig. 17.18.i) with a low, rounded presetal lobe and a longer, conical postsetal lobe. Dorsal cirrus well developed in anterior segments as a curved papilla arising from the dorsal base of the foot. Setae include four to five winged capillaries often serrated at the bases of the wings and about three pointed, yellow acicula which just pierce the skin of the parapodium.

Type locality: Devon, England.

Records: Madagascar (i, s).

Distribution: Cosmopolitan in temperate and tropical seas (i, s).

Arabella iricolor caerulea (Schmarda, 1861)
(fig. 17.18.n–o)

Aracoda caerulea Schmarda, 1861 : 115.
Arabella iricolor var. *caerulea:* McIntosh, 1904 : 46, pl. 4 figs. 16–17 ; Day, 1953 : 439, fig. 6 n.

Body up to 160 mm. long. The subspecies *caerulea* differs from the stem form in the development of the dorsal cirrus. In *A. i. caerulea* the dorsal cirrus is merely an obscure papilla on the base of the foot (fig. 17.18.n). Setae (fig. 17.18.o) as in the stem form.

Type locality : Table Bay, South Africa.

Records : South West Africa (26/15/i) ; Cape (29/16/i and 34/23/e, i to 32/28/i, s) ; Natal (30/30/i and 29/31/i) ; Mocambique (26/32/i).

Distribution : Endemic.

DRILONEREIS Claparède, 1870

Prostomium bluntly conical with or without eyes. Maxillae consist of four to five pairs of toothed plates which are strongly falcate and have long filiform supports plus a median unpaired piece. Mandibles may be weak or absent. Parapodia with rudimentary dorsal cirri, unequal presetal and postsetal lobes but without gills or ventral cirri. Setae include winged capillaries, fine acicula with filiform tips plus a stout projecting aciculum but no hooks.

Type species : *Lumbriconereis filum* Claparède, 1868.

Key to Species

1 Mandibles well developed. Mx. I with toothed bases. Mx. V present . . . ***D. falcata***
– Mandibles absent. Mx. I without teeth at the bases. Mx. V absent . . . ***D. monroi***

Drilonereis falcata Moore, 1911
(fig. 17.19.a–f)

Drilonereis falcata Moore, 1911 : 298, pl. 20 figs. 150–154 ; Day, 1960 : 364, fig. 13 a–e.

Body slender and rounded in section, about 100 mm. long. Prostomium (fig. 17.19.a) a depressed blunt cone. Internal eyes may be present. Mandibles (fig. 17.19.c) stout, black, triangular. Maxillae (fig. 17.19.b) with teeth at the base of Mx. I and the anterior tooth of all plates larger than subsequent ones. Maxillary formula : Mx. I = 8 + 6 ; Mx. II = 8 + 8 ; Mx. III = 4 + 3 ; Mx. IV = 1 + 1 ; Mx. V = 1 + 1. Median unpaired support dagger-shaped and black throughout. Feet (fig. 17.19.d, f) well developed after the two anterior achaetous segments. Presetal lobe very small, postsetal lobe conical. A stout projecting aciculum (fig. 17.19.e) present from the 10th–20th foot and there may be two acicula in some feet. Posterior end of body unknown.

Type locality : Monterey, California.

Records : South West Africa (28/16/s) ; Cape (34/18/s) – only two specimens.

Distribution : California (d).

Drilonereis monroi Day, 1960
(fig. 17.19.g–i)

Drilonereis monroi Day, 1960: 365, fig. 13 f–i.

A long, tough, wiry species reaching more than 200 mm. Prostomium (fig. 17.19.g) blunt, depressed and without eyes; it is almost fused to the first segment. Mandibles absent. Maxillae (fig. 17.19.h) well developed but Mx. I have no teeth at the base of the fang and Mx. V is absent. Maxillary formula: Mx. I = 1 + 1; Mx. II = (6–8) + (6–8); Mx. III = 4 + 4; Mx. IV = 4 + 4. Maxillary supports very slender and the unpaired median piece is pale except for a black heart-shaped area at the origin. Parapodia (fig. 17.19.i) small but well formed with a low, rounded presetal lobe and a bluntly, conical postsetal lobe. Between the two lobes there are four to five smooth-winged capillaries, one stout, blunt, projecting aciculum and three to four internal acicula with long tapering tips which simulate emerging capillaries. Posterior feet are much longer and the presetal lobe increases until it is half the length of the postsetal one.

Type locality: 108 metres, off Lamberts Bay.

Records: South West Africa (26/14/s); Cape (29/16/s and 32/17/s, d to 34/18/s).

Distribution: Tristan da Cunha (s).

NOTOCIRRUS Schmarda, 1861

Prostomium conical and usually has four eyes. Mandibles well developed. Maxillae consist of four to five pairs of toothed plates with long supports and a median unpaired piece. Maxillary plates either weakly falcate or with equal sized teeth. Parapodia with unequal presetal and postsetal lobes, vestigial dorsal cirri but no ventral cirri. Setae include winged capillaries and a heavy projecting aciculum but no hooks.

Type species: *Notocirrus chilensis* Schmarda, 1861.

Key to Species

1 Body slender with well marked segments but not moniliform . . . . ***N. australis***
– Body slender with intersegmental constrictions so deep that the body is moniliform ***N. scoticus****

Notocirrus australis Day, 1960
(17.19.j–m)

Notocirrus australis Day, 1960: 367, fig. 14 a–d.

Body up to 60 mm. long, very slender but not moniliform. Prostomium (fig. 17.19.e) conical with four eyes in a posterior row. Jaws well developed. Mandibles (fig. 17.19.k) strong, each roughly triangular and the two are narrowly joined in the median line. The maxillae (fig. 17.19.j) have the first tooth of each plate slightly

*See Day (1960: 368).

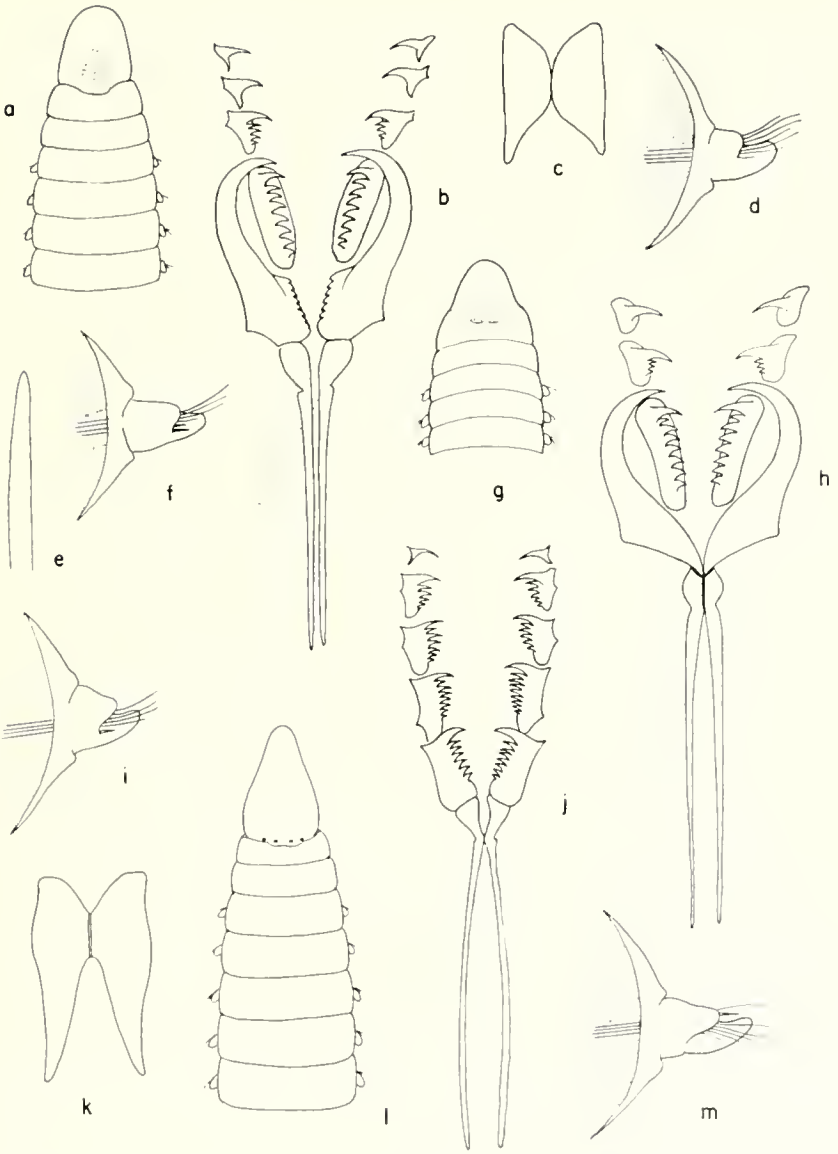

FIG. 17.19. *Drilonereis falcata*. (A) Head. (B) Maxillae. (C) Mandibles. (D) Anterior foot. (E) End of projecting aciculum. (F) Middle foot. *Drilonereis monroi*. (G) Head. (H) Maxillae. (I) Middle foot. *Notocirrus australis*. (J) Maxillae. (K) Mandibles. (L) Head. (M) Middle foot.

enlarged and Mx. I and Mx. II overlap and may fuse. Maxillary formula: Mx. I = 7 + 7; Mx. II = 7 + 8; Mx. III = 7 + 6; Mx. IV = 5 + 4; Mx. V = 1 + 1. Maxillary supports long and slender with the median unpaired piece very faint. Parapodia (fig. 17.19.m) small, each with an obscure dorsal cirrus, a rudimentary presetal lobe and a thumb-shaped postsetal one. Setae include about three broad-winged capillaries, and a stout aciculum which projects almost as far as the end of the postsetal lobe.

TYPE LOCALITY: False Bay, South Africa.

RECORDS: Cape (34°18′S) – a single record.

Subfamily **DORVILLEINAE** Chamberlin, 1919

Small, 10–20 mm. worms with well developed appendages and parapodia. Prostomium rounded with two palps, two antennae and sometimes a nuchal papilla. Mandibles usually dentate. Maxillae consist of two or four rows of numerous minute toothed plates. The first two segments apodous and achaetous. Parapodia uniramous, the notopodium being reduced to an internal aciculum in the cirrophore of the dorsal cirrus or absent. Neuropodia well developed with a large setigerous lobe and a ventral cirrus. Setae include superior capillaries and sometimes forked setae; inferior setae compound with falcigerous blades of varying length.

Records from southern Africa

Dorvillea angolana (Augener)	
as *Stauronereis angolana* Augener . . .	26Ai, s
Dorvillea gardineri Crossland	—Ms
Dorvillea neglecta (Fauvel)	41Ci, 50Cs
as *Staurocephalus neglectus* Fauvel . . .	33Cs, 36Ci, 40Ni
as *Stauronereis egena* (non Ehlers) . . .	26Wi
Dorvillea rudolphi (Delle Chiaje) . . .	—Cs
Dorvillea rubrovittata (Grube)	
as *Stauronereis rubrovittatus* (Grube) . . .	26Ai
Ophryotrocha puerilis Claparède & Metschnikov .	56Ci
Protodorvillea biarticulata Day	56Cs
Protodorvillea egena (Ehlers)	45Ni, 50Cs, 56Cs
as *Stauronereis egena* Ehlers	21Ci

BIOLOGICAL NOTES

The dorvilleids are the most primitive members of the family Eunicidae and this is reflected in their habits. They neither burrow like lumbrinerids and arabellids nor make tubes like the onuphids. Instead they creep slowly over the surface and may be found under loose stones or among old shells. *Dorvillea* itself is probably carnivorous for no algal food or detritus has been found in its gut. *Ophryotrocha puerilis* however is definitely an algal feeder. It is the smallest of the dorvilleids and is seldom taken in the field. It turns up in aquaria in many parts of the world and is

found feeding on the attached diatoms and filamentous algae which grow on the glass. Careful observation shows that it scrapes these off with the anterior maxillary plates which are beset with comb-like rows of microscopic teeth like the radula of a limpet.

THE MAIN DIAGNOSTIC CHARACTERS

The most recent revision of the subfamily is that of Pettibone (1961). She regards the group as a separate family and recognises five genera namely *Ophryotrocha*, *Protodorvillea*, *Dorvillea*, *Stauronereis* and *Papillodorvillea*. The first two genera are quite distinct as shown in the key below. The last three genera are distinguished by the nature of the setae and the presence of a nuchal papilla in *Papillodorvillea*. The view adopted here is that these characters do not merit generic rank and all three are included in the genus *Dorvillea*.

The head and its appendages. The important characters include the relative size of the palps, the number of joints on the antennae and the presence or absence of a nuchal papilla. The presence of one or two pairs of eyes seems to vary within a single species and the jaw elements are too small for accurate diagnosis.

Parapodia. These may be either uniramous or sub-biramous (sesquiramous) according to the genus. In the former case the dorsal cirri are very small and lack cirrophores and internal acicula; in the latter case the dorsal cirri are long, their cirrophores well developed and the internal acicula obvious. The presence of an enlarged presetal lobe to the neuropodium is important at the species level.

Setae. Three types may be present. The superior setae always include simple capillaries but forked setae may also be present. The inferior setae are compound and falcigerous but the blades vary in length and the terminal teeth are too minute for ready diagnosis.

KEY TO GENERA

1 Palps represented by minute papillae (fig. 17.20.b). Maxillae with only two rows of minute toothed plates. (Parapodia uniramous) . . ***OPHRYOTROCHA*** (p. 451)
– Palps well developed with a long palpostyle and a terminal palpophore (fig. 17.21.f). Maxillae with four rows of small toothed plates 2
2 Parapodia uniramous with ovoid dorsal cirri, but no cirrophores nor notoacicula (fig. 17.20.i) . . . . . ***PROTODORVILLEA*** (p. 452)
– Parapodia subbiramous with the dorsal cirri mounted on ceratophores containing notoacicula (fig. 17.21.b) . . . . . ***DORVILLEA*** (p. 454)

OPHRYOTROCHA Claparède & Mecznikov, 1869

Body small and linear with segmental rows of cilia. Prostomium with a pair of small papilliform palps and a similar pair of antennae. Two to four eyes. Maxillae consist of a pair of large forceps and two rows each of six to eight small dentate plates. Mandibles well developed. Peristome and the next segment apodous and achaetous. Body segments with uniramous parapodia each with a small dorsal and ventral cirrus attached to the stout setigerous lobe. Setae include simple capillaries and compound forms.

TYPE SPECIES: *Ophryotrocha puerilis* Claparède & Metschnikov, 1869

Ophryotrocha puerilis Claparède & Metschnikov, 1869
(fig. 17.20.a–f)

Ophryotrocha puerilis Claparède & Metschnikov, 1869: 184; Fauvel, 1923: 450, fig. 180 a–h; Hartman, 1944: 191, pl. 15 figs. 325–330.

Body (fig. 17.20.a) colourless and vermiform, about 5 mm. long for 20–30 segments. Prostomium (fig. 17.20.b) rounded with two rings of cilia, a pair of papilliform antennae dorsolaterally and a similar pair of palps antero-ventrally. A single pair of eyes. Jaws brown and well chitinised. Mandibles (fig. 17.20.c) with divergent shafts and bilobed, crenulate cutting edges. Maxillae consist of a pair of stout forceps not dentate at the base and seven pairs of small dentate elements of which the basal three each have about five teeth of decreasing size and the distal four about 12 minute subequal teeth. All segments with rings of cilia. Parapodia (fig. 17.20.d) with small dorsal and ventral cirri attached to the setigerous lobe. Setae include one to three stout simple setae dorsally (fig. 17.20.e), two to four unidentate falcigerous compound setae medially (fig. 17.20.f) and a single simple pointed seta ventrally.

Type locality: Mediterranean Sea.

Records: Cape (34 18 i) – a few specimens in an aquarium feeding on the algal film on the glass.

Distribution: Cosmopolitan in temperate and tropical seas – intertidal and often appearing in aquaria.

PROTODORVILLEA Pettibone, 1961

Prostomium biannulate with small antennae, sometimes absent. Palps usually elongate, always with a terminal palpostyle. No nuchal papilla. Mandibles flared and denticulate anteriorly. Maxillae with four long rows of numerous dentate elements. Peristome and the next segment apodous and achaetous. Parapodia uniramous with small dorsal cirri which lack cirrophores and notocacicula and are inserted near the distal end of the foot. Ventral cirri present. Superior setae simple and include both capillaries and forked setae. Inferior setae compound and falcigerous.

Type species: *Staurocephalus kefersteini* McIntosh, 1869.

Key to Species

1 Antennae biarticulate. Dorsal cirri on all parapodia including the first . . ***P. biarticulata***
– Antennae with a single long joint. No dorsal cirrus on the first foot . . . . ***P. egena***

Protodorvillea biarticulata Day, 1963
(fig. 17.20.g—l)

Protodorvillea biarticulata Day, 1963b: 414, fig. 8 g–l.

Body (fig. 17.20.g) small, about 4 mm. long with 100 segments. Prostomium (fig. 17.20.h) ovoid anteriorly with one pair of eyes. Palps long, irregularly wrinkled and end in well-marked palpostyles. Antennae small with two elongated joints. Body

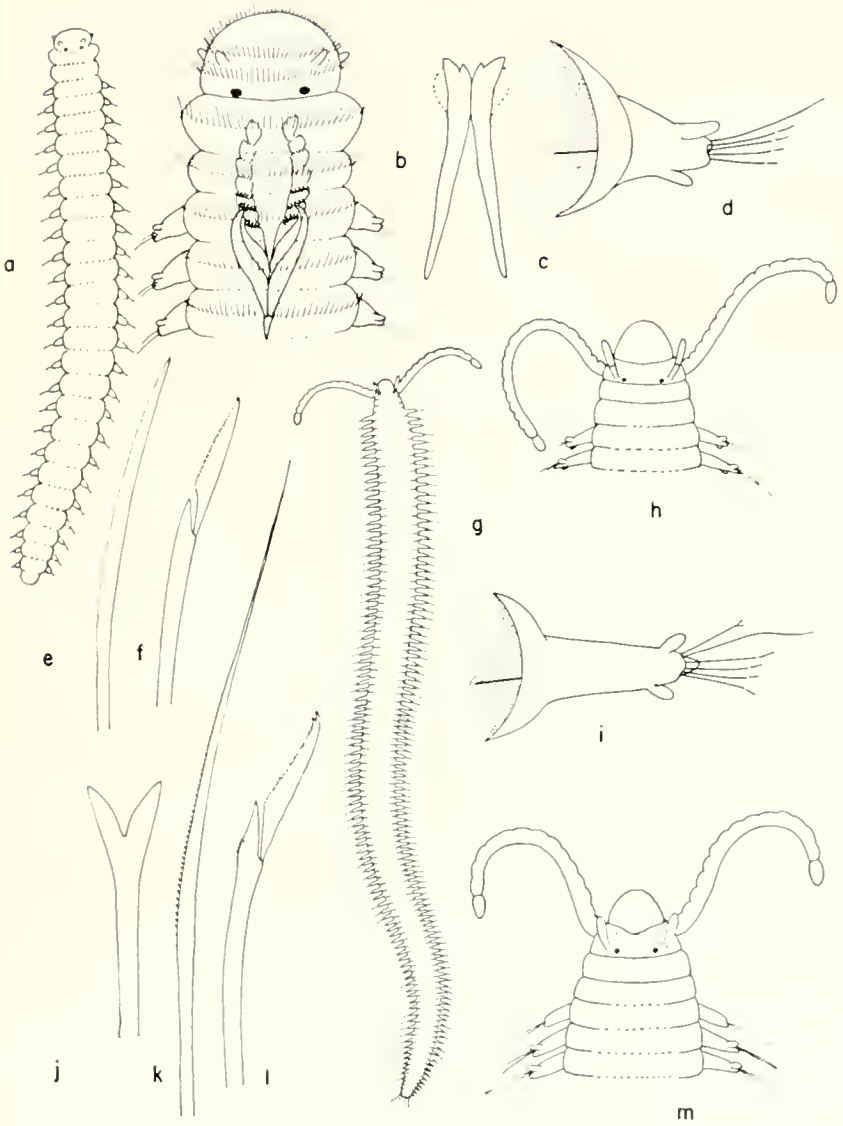

FIG. 17.20. *Ophryotrocha puerilis*. (A) Entire worm (16 times life size). (B) Head. (C) Mandibles. (D) Foot. (E) Superior simple seta. (F) Inferior compound seta. *Protodorvillea biarticulata*. (G) Entire worm (16 times life size). (H) Head. (I) Foot. (J) Forked seta. (K) Superior capillary seta. (L) Falcigerous seta. *Protodorvillea egena*. (M) Head.

segments short, parapodia (fig. 17.20.i) relatively large. Dorsal cirri arise from the distal ends of the feet. They are small, ovoid and present on all feet including the first. No notociculum nor dorsal cirrophore. Setigerous lobe with a conical presetal lip and a much smaller postsetal one. Superior setae include two capillaries (fig. 17.20.k) with the base of the blade serrated, and one forked seta (fig. 17.20.j) with a smooth shaft and short, subequal prongs which are flanged on their inner margins. Inferior setae are three to four heterogomph falcigers (fig. 17.20.l) with serrated shaft-heads and minutely bidentate blades of varying length.

Type locality: Agulhas Bank, South Africa.

Records: Cape (34 21 s) – a single record.

Protodorvillea egena (Ehlers, 1913)
(fig. 17.20.m)

Stauronereis egena Ehlers, 1913: 501, pl. 35 figs. 1–6.
(non) *Stauronereis egena:* Augener, 1918: 377, pl. 5 figs. 102–103, text-fig. 45.
Protodorvillea egena: Day, 1963b: 412; Banse & Hartmann-Schröder, 1964: 241 (synonymy).

Body 4–8 mm. long with about 60 segments. Prostomium (fig. 17.20.m) broadly conical with two pairs of eyes, the anterior pair being minute. Antennae very small with one club-shaped joint. Palps long and wrinkled but each has a well-marked terminal palpostyle. Maxillae with four rows of minute dentate elements. Dorsal cirri short and ovoid, without internal acicula or cirrophores; they arise from the distal ends of the feet and are present on all feet except the first. Setigerous lobes long, each with a triangular presetal lobe. Ventral cirri ovoid. Superior setae include one serrated capillary and one to two forked setae with smooth shafts and short, equal prongs flanged on their inner margins. The four inferior setae are compound with short falcigerous blades which have minutely bidentate tips.

Type locality: False Bay, South Africa.

Records: Cape (34 18 s) – only two certain records.

Distribution: South India; Red Sea.

DORVILLEA Parfitt, 1866
(including *STAURONEREIS* Verrill, 1900 and *PAPILLODORVILLEA* Pettibone, 1961)

Prostomium rounded with two long palps bearing small terminal palpostyles, two antennae and sometimes a nuchal papilla posteriorly. Maxillae consist of four series of numerous small toothed plates. Mandibles often dentate. The peristome and the next segment apodous and achaetous. Parapodia sub-biramous with the dorsal cirrus mounted on a cirrophore containing an internal aciculum; below this is a long setigerous lobe with a small ventral cirrus. Superior setae simple and include capillaries and often forked setae. Inferior setae compound with falcigerous blades of varying length.

Type species: *Staurocephalus rubrovittatus* Grube, 1855.

Key to Species

1	A large and obvious nuchal papilla (fig. 17.21.a). (No forked setae)	*D. gardineri*
–	No nuchal papilla	2
2	Forked setae present (fig. 17.21.d). (Antennae with 8–11 joints)	4
–	Forked setae absent	3
3	Antennae short with a maximum of four joints (fig. 17.21.k)	*D. rubrovittata*
–	Antennae long with five to nine joints	*D. angolana*
4	Prongs of forked setae very unequal	*D. rudolphi*
–	Prongs of forked setae subequal	*D. neglecta*

Dorvillea gardineri (Crossland, 1924)
(fig. 17.21.a–e)

Staurocephalus gardineri Crossland, 1924: 93, fig. 112–118; Fauvel, 1953: 280, fig. 143 d–f.

Body large, up to 50 mm. long with 100 segments. Prostomium (fig. 17.21.a) small and rounded with four large eyes. The peristome is separated from the prostomium by a deep dorsal incision containing a large nuchal papilla. Antennae with about 10 indistinct annulations. Palps slightly longer than the antennae and the terminal palpostyle is poorly defined. Maxillae with four rows of toothed plates. Mandibles well developed with the anterior margins denticulate. Parapodia (fig. 17.21.b) with tapering dorsal cirri formed of a long cirrophore incompletely fused to the cirrostyle which is about a quarter its length. A dorsal cirrus is present on setiger 1. Superior setae are capillaries with flattened blades and blunt tapering tips. Broken setae give the effect of forked setae (fig. 17.21.c). Inferior setae compound and falcigerous with short, tridentate blades.

Type locality: Maldive Is. and Wasin (tropical East Africa).

Records: Madagascar (i, s).

Distribution: Tropical Indian Ocean (i).

Dorvillea neglecta (Fauvel, 1923)

Staurocephalus neglectus Fauvel, 1923: 447, fig. 179 i–q.

Body about 15 mm. long with 80 segments. Prostomium broadly conical and depressed. Two pairs of eyes. A pair of long palps each with a well marked terminal palpostyle; antennae slightly shorter with 8–11 joints. Mandibles with dentate cutting edges, the external three to four teeth being easily detached. Maxillae consist of four rows of small toothed plates. No dorsal cirrus on setiger 1. Each of the later dorsal cirri has a long cirrophore with an internal aciculum and a cirrostyle only half its length. Setigerous lobe long with a conical presetal lip and a shorter postsetal one. Superior setae include three to four fine, faintly serrated

Fig. [illegible] *Dorvillea* sp. a Head b Foot c Branchiate parapodium d Aciculate seta e Pectinate seta f Pectinate seta g Foot h Head i Capillary simple seta j Pectinate seta k Maxillae l Mandibles. *Dorvillea rubrovittata* after Day a Head b Foot c Base of capillary simple seta. *Dorvillea longicirrata* after Day a Head

capillaries and one to two forked setae with subequal prongs and smooth shafts. Inferior compound setae numerous with faintly serrated shafts and falcigerous blades of varying length and tridentate tips.

TYPE LOCALITY: France.

RECORDS: Cape (32/18/s to 34/18/i, s and 34/23/d); Natal (29/31/i).

DISTRIBUTION: English Channel (i).

Dorvillea rudolphi (Delle Chiaje, 1825)
(fig. 17.21.d–j)

Nereis Rudolphi Delle Chiaje 1825: 176.
Staurocephalus Rudolphi: Fauvel 1923: 446, fig. 178 a-p.

Body about 15 mm. long with 80 segments. Prostomium (fig. 17.21.f) broadly conical and depressed. Two pairs of eyes. A pair of long palps each with a well marked terminal palpostyle; antennae slightly shorter with 6–11 joints. Mandibles (fig. 17.21.j) with dentate cutting edges, the external 3–4 teeth being easily detached. Maxillae (fig. 17.21.i) consist of four rows of small toothed plates. No dorsal cirrus on setiger 1. Each of the later dorsal cirri (fig. 17.21.e) has a long cirrophore with an internal aciculum and a cirrostyle only half its length. Setigerous lobe long with a conical presetal lip and a shorter postsetal one. Superior setae include 3–4 fine, faintly serrated capillaries (fig. 17.21.g) and 1–2 forked setae (fig. 17.21.d) with unequal prongs and serrated shafts. Inferior compound setae numerous with faintly serrated shafts and falcigerous blades of varying length and bidentate tips guarded by tiny hoods.

TYPE LOCALITY: Naples.

RECORDS: Cape (33/18/s).

DISTRIBUTION: English Channel (i); North Carolina (s); Madeira (i); Mediterranean (s).

Dorvillea rubrovittata (Grube, 1855)
(fig. 17.21.k-m)

Staurocephalus rubrovittatus Grube, 1855: 97; Fauvel, 1923: 445, fig. 177 a–l.

Body 15–30 mm. long with 40–50 segments. Prostomium (fig. 17.21.k) almost spherical with four eyes of which the anterior pair are the larger. Palps short; antennae shorter, with three to four joints in adults. Mandibles with dentate cutting margins. Maxillae with four rows of small toothed plates. No dorsal cirrus on setiger 1. Later segments with dorsal cirri which have long cirrophores supported by internal acicula and very short cirrostyles (fig. 17.21.l). Setigerous lobes long, bluntly conical with fairly long presetal and postsetal lips. Ventral cirri digitform. Superior setae (fig.

17.21.m) simple with flattened blades dentate on one margin and truncate ends. Inferior setae compound and falcigerous with bidentate tips.

TYPE LOCALITY: Adriatic.

RECORDS: Not recorded from southern Africa.

DISTRIBUTION: Mediterranean; tropical West Africa (São Thomé and Angola).

Dorvillea angolana (Augener, 1918)
(fig. 17.21.n)

Stauronereis angolana Augener, 1918: 380, pl. 5 figs. 132–133, pl. 6 fig. 217, text-fig. 46.

Body pale, about 10 mm. long for 80 segments. Prostomium (fig. 17.21.n) slightly broader than long with two pairs of eyes of which the anterior pair are much larger and more lateral in position. Palps about as long as the prostomium is broad, each with a short terminal palpostyle.

Antennae rather longer and more slender than the palps, each with five to nine well marked joints. Mandibles with the cutting margin dentate and the outer teeth detached. Maxillae consist of four rows of small toothed plates. No dorsal cirrus on setiger 1. Later dorsal cirri twice as long as the setigerous lobes. The cirrophore has an internal aciculum and is 1·5 times the length of the cirrostyle. The setigerous lobe has a broadly oval presetal lip and a longer, triangular postsetal one. Ventral cirrus shorter than the setigerous lobe. Superior setae are simple capillaries with slightly flattened blades serrated towards the tips. Forked setae absent. Inferior setae compound and falcigerous with blades of varying length.

TYPE LOCALITY: Ambrizette, Angola.

RECORDS: Not recorded from South Africa.

DISTRIBUTION: Angola (i, s); Gulf of Guinea (s).

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